

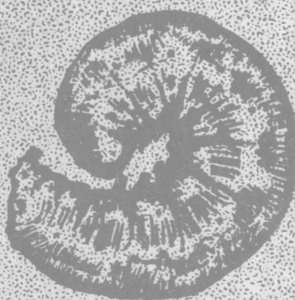
An Annotated Bibliography of the Dingy Cutworm Complex

Feltia ducens Walker
and *Feltia subgothica* Haworth

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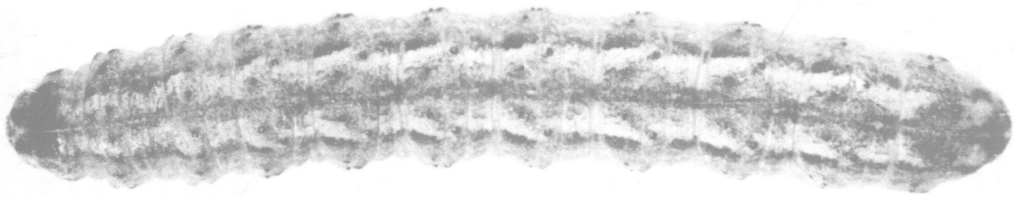


OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
WOOSTER, OHIO

CONTENTS

* * * *

Introduction	1
Bibliography	4
Index	22



Dingy Cutworm Larva



Dingy Cutworm Adult

AN ANNOTATED BIBLIOGRAPHY OF THE DINGY CUTWORM COMPLEX,
Feltia ducens Walker and Feltia subgothica (Haworth)

Roy W. Rings¹, Beth A. Baughman², and Fred J. Arnold²

Introduction

The purpose of this circular is to consolidate the abstracted literature on the dingy cutworm complex, *Feltia ducens* Walker and *Feltia subgothica* (Haworth). The term "dingy cutworm complex" is used since there is much confusion and disagreement between both earlier and contemporary taxonomists as to the correct usage of the scientific name of the economically important dingy cutworm.

Contemporary taxonomists agree that *Feltia ducens* and *Feltia subgothica* have been considered distinct species for more than 70 years. In the past there has been debate as to whether the latter species should be called *subgothica* or *jaculifera*. In this publication, the authors are following the nomenclatural policy of the United States National Museum which is based upon Forbes' interpretation of the complex. The photographs on the contents page illustrate the species which the authors consider the dingy cutworm, *Feltia ducens* Walker. Forbes (1954) believed that Haworth (1810) probably had *ducens* and *subgothica* mixed up. He implied that it is not certain which species Haworth described as *subgothica* and therefore Forbes called it *jaculifera*. Several other authors (Hampson 1903; McDunnough 1938; Smith 1893) believed that Haworth had only a single specimen. This single specimen was located about 1900 and proved to be *subgothica*. To add to the confusion, British authors, following Haworth, illustrated *ducens* as *subgothica*.

In this publication, the most common species of economic importance known as the dingy cutworm is considered *Feltia ducens* Walker. However, in the bibliographical annotations the authors are using the same scientific name used by the author of the article. In most cases then, *Feltia subgothica* = *Feltia ducens* when non-taxonomic papers are summarized.

The following is a partial synonymy based upon the above comments:

Feltia ducens Walker

Feltia ducens Walker, 1856, p. 203; Grote and Robinson, 1868, p. 77; etc.

Agrotis ducens (Walker), Forbes, 1954, p. 46; etc.

Agrotis subgothica auct. nec (Haworth), Stephens, 1829, p. 126; etc.

Feltia subgothica auct. nec (Haworth), Smith, 1893, p. 81; etc.

Agrotis jaculifera Guenée (in part), 1852, p. 262.

Feltia radiata Smith, 1891, p. 38.

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Feltia subgothica (Haworth)

Noctua subgothica Haworth, 1810, p. 224.

Agrotis subgothica (Haworth), Packard, 1869, p. 306.

Feltia subgothica (Haworth), Hampson, 1903, p. 345; McDunnough, 1938, p. 63; etc.

Agrotis jaculifera Guenée, (in part), 1852, p. 262; Riley, 1869, p. 82; etc.

Feltia jaculifera (Guenée), Smith, 1891, p. 38; -- 1893, p. 81; etc.

Agrotis tricola Lintner, 1874, p. 159; Harv., 1875, p. 5; etc.

The authors appreciate the opinions and advice of Dr. E. L. Todd, Systematic Entomology Laboratory, U. S. National Museum, Washington, D. C., and Dr. J. Donald Lafontaine, Biosystematics Research Institute, Research Branch, Canada Department of Agriculture, Ottawa, Ontario, in regard to the synonymy of the dingy cutworm complex.

It should be mentioned that the list of "Common names of insects approved by the Entomological Society of America" gives *Feltia subgothica* (Haworth) as the scientific name of the dingy cutworm. Therefore, economic entomologists will continue to use *subgothica* until the name is corrected.

The fully grown larva of *Feltia subgothica* is dingy gray and easily recognized by the broad, pale, dorsal stripe which is obliquely notched on the inner border and outlined by a narrow dark line on each side. The common name refers to the ground color of the larva.

The cutworm has a wide range of hosts, including alfalfa, apple, bean, cabbage, clover, corn, cucumber, flax, grasses, horseradish, onions, peas, raspberry, squash, tobacco, tomato, and wheat.

Walkden (1945) found that larvae were found, in order of preference, in the following situations: (1) overgrazed pasture, (2) little barley pasture, (3) roadside bluegrass, (4) dropseed wasteland, (5) native hay meadow, (6) alfalfa (old stand), (7) little bluestem pasture, (8) sweet clover, (9) orchard brome pasture, and (10) panic grass wasteland.

The moth was described in detail by Forbes (1954) and was figured in color by Holland (1968) in Plate 22.

The bibliographical information was obtained by a thorough search of the libraries at The Ohio State University and the Ohio Agricultural Research and Development Center for the years 1869 to 1973. The literature search recovered some, but not all, checklists, faunal lists, or comprehensive publications and texts which cannot be abstracted for the recovery of a single species. This publication is not intended to be a comprehensive bibliography for taxonomic purposes, but is believed to be complete as far as references in American abstracting journals are concerned.

The authors have established a profile on the dingy cutworm in cooperation with the Mechanized Information Center at The Ohio State University Libraries. This computerized system of retrieval will aid in keeping this bibliographical information current. Supplementary bibliographical data on the dingy cutworm complex will be summarized at yearly intervals and will be available on request from the Ohio Agricultural Research and Development Center.

The preparation of this bibliography is only a part of an extensive, multi-state, research program supported by grants from the Cooperative State Research Service and the federal Environmental Protection Agency. This is a regional research project entitled "Bionomics and Management of Soil Arthropod Pests."

The authors are sincerely grateful to the following individuals who provided literature citations, reprints, or photocopies for the bibliography: Dr. Clayton C. Beegle, Iowa State University; Dr. William H. Luckmann, Illinois Natural History Survey; and Dr. Richard J. Sauer, Michigan State University.

Entries are listed alphabetically by author except in cases where the publication is anonymous or more likely to be identified with a governmental agency under which it was published. The abbreviations in the citations follow the American standard for periodical title abbreviations which was published in Biological Abstracts, 45(13):4347-4361. All references in this publication deal with the dingy cutworm; however, the scientific name used in a given article is also used in the annotation so that there is no question as to the species being cited. The numbers in parentheses following the annotation represent the page numbers which include information on the dingy cutworm if they are different from the citation page numbers.

Bibliography

- Ainslie, G. G. 1917. Crambid moths and light. J. Econ. Entomol. 10:114-123.
Collections of 14 species of *Crambinae* were taken at Nashville, with *Crambus teterrellus* the most abundant. It was found that the same principles held good in the case of several species not Crambids, for example, *Feltia subgothica* and *Feltia gladiaria*, although the data regarding the species are much more fragmentary and inconclusive. (115)
- Anonymous. 1921. Las Cuncunillas. Serv. Policia Sanit. Vej., Santiago de Chile.:1-8.
Although cutworms are common to the gardens of Chile, it is only under unusual circumstances that they become serious pests. The dingy cutworm (*Feltia subgothica*) attacked corn, beans, various grasses and pasture plants.
- Anonymous. 1935. Diseases, insects and other pests injurious to plants. Bien. Rep. Kans. Agr. Exp. Sta. 7:94-112. The dingy cutworm (*Feltia subgothica*, (Haw.); *Feltia ducens*, Wlk.) caused noticeable damage to alfalfa in the autumn of 1933 for the first time in several years. Most of the larvae were destroyed by cold weather.
- Arnott, D. A. and H. W. Goble. 1943. The value of molasses-free baits in the control of cutworms in tobacco fields. 73rd Rep. Entomol. Soc. Ont. 1942:1-75.
The dingy cutworm (*Feltia ducens*) was found to be among the cutworms infesting tobacco crop areas of Norfolk County, Ontario. (31)
- Balduf, W. V. 1931. The oviposition habits of *Feltia subgothica* Haw. (Noctuidae Lep.) Proc. Entomol. Soc. Wash. 33:81-88.
The eggs and young larvae of *Feltia subgothica* have frequently been observed in the flowers of *Helianthus* spp. in Ohio. It was not possible to trace the larvae of the dingy cutworm after they left the florets of *Helianthus* (81). A life history of the dingy cutworm is given. (82)
- Balduf, W. V. 1942. The oviposition habits of *Feltia subgothica* Haworth. J. Econ. Entomol. 35(2):290.
Eggs of the dingy cutworm occurred in nature at several widely separated localities in Ohio and Illinois. The larvae from these eggs were reared on lettuce. The ovipositional procedure was described. (290)
- Beadle, L. A. and H. F. Wilson. 1938. Insect pests. Bull. Wis. Agr. Exp. Sta. 440:1-95.
The dingy cutworm (*Feltia ducens*) Wlk. was one of the four species of cutworms found in Wisconsin that were so abundant as to cause serious damage. *Feltia ducens* comprised 19% of the total number of cutworms. (19-21)

- Bethune, C. J. S. 1869. Notes on Canadian Lepidoptera. Can. Entomol. 1:85-89.
This article contains a list of species reported for the first time in Canada. "*Agrotis subgothica*, Haworth (*Feltia ducens*. Walk.) - Taken at Orillia, by Mr. Bush." (86)
- Blackmore, E. H. 1918. Entomology. Rep. Provincial Museum Nat. Hist. British Columbia 1917:9-15.
"A rather severe outbreak of cutworms occurred in the Victoria and Vancouver districts during May and the early part of June, whole beds of garden produce being completely devastated. One of the chief pests was the dingy cutworm (*Feltia ducens*)."
- Blickenstaff, C. C. 1970. Common names of insects approved by the Entomological Society of America. Entomol. Soc. Amer. Misc. Pub.:1-36.
The scientific name of the dingy cutworm is considered to be *Feltia subgothica* (Haworth). (6)
- Bowles, G. J. 1879. Canadian cutworms. Annu. Rep. Entomol. Soc. Ont.: 1-89.
Mr. Riley referred to *Agrotis jaculifera* Guenée as the dingy cutworm and to *Agrotis subgothica* as the western striped cutworm. According to him, the dingy cutworm differs from the western striped cutworm in the following ways: it is never as large, generally more dingy or darker, less distinct longitudinal lines, and the back is a more decided pale buff. (40-41)
- Britton, W. E. 1927. Twenty-sixth report of the state entomologist of Connecticut, 1926. Conn. Agr. Exp. Sta. Bull. 285:161-283.
The dingy cutworm (*Feltia subgothica*) is sometimes a climbing cutworm that eats the buds of young apple trees. (169)
- Butler, A. G. 1889. Synonymic notes on the moths of the earlier genera of Noctuites. Trans. Entomol. Soc. London 1889:375-387.
"7. *Agrotis subgothica*, Haw.
Feltia ducens, Walker, Lep. Het., ix., p. 203, n. 1 (1856). An example from Orilla". (377)

The Canadian Agricultural Insect Pest Review

This publication aims to present, in manuscript form, a periodical statement on current insect pest conditions. It presents data governing the seasonal appearance, the effects of winter, degrees of parasitism, notes on distribution and abundance of insect pests. It has been published by the Canada Department of Agriculture, Research Branch--Scientific Information Section, Ottawa, Ontario, from 1923 to present. From 1923 to 1967, this publication was known as the Canadian Insect Pest Review.

1923. Can. Insect Pest Rev. 1.
Feltia ducens Wlk. was very plentiful in southern Alberta and was by far the most numerous noctuid taken in traps at Lethbridge. (52)
1924. Can Insect Pest Rev. 2.
Feltia ducens was observed among the cutworms at Saskatoon, Saskatchewan. (13)

- Cutworms collected in the spring of 1924 in Mississippi showed *Feltia ducens* Wlk. or *Feltia subgothica* Haw. to be among the most abundant. They were collected in clover land and among rank weeds. (26)
1931. Can. Insect Pest Rev. 9.
A few specimens of the dingy cutworm *Feltia ducens* Wlk. were observed in garden crops in the Clarenceville districts, Quebec. (76)
1933. Can. Insect Pest Rev. 11.
A light infestation of the dingy cutworm, *Feltia ducens* Walk., was observed on hollyhocks in gardens in grassy surroundings at Strathroy, Ontario. (25)
1935. Can. Insect Pest Rev. 13.
Feltia ducens was among the cutworms that caused considerable damage to raspberry plants at Caradoc, Ontario. (93)
1936. Can. Insect Pest Rev. 14.
The dingy cutworm *Feltia ducens* Wlk. was found very numerous in about 3 acres of lowland in a 5-acre tract of spring plowed sod in Metcalf Township, Ontario. (80)
1938. Can. Insect Pest Rev. 16.
Dingy cutworms were taken at light traps but the level of infestation was low in Ontario. (250)
1941. Can. Insect Pest Rev. 19.
The dingy cutworm, *Feltia ducens* Wlk., was moderately common at lights in Marmora, Ontario. (250)
1942. Can. Insect Pest Rev. 20.
The dingy cutworm was observed in Saskatoon, Saskatchewan (Lampman-Estevan district), causing damage to flax (144); in Smeaton-Garrick area, Saskatchewan, on alfalfa (145); in Simcoe and Delhi, Ontario, on tobacco crops (228); and in Chatham, Ontario, in flight. (229)
1943. Can. Insect Pest Rev. 21.
The dingy cutworm was present at Niagara Falls, Ontario, on tobacco (34); in gardens at Niagara Falls on flowers and vegetables (47); and in Estevan-Lampman district, Saskatchewan, on flax. (70)
1944. Can. Insect Pest Rev. 22.
The dingy cutworm was present in Saskatoon, Saskatchewan, on flowers (141) and in Deveron and Drake in oat fields. (183)
1945. Can. Insect Pest Rev. 23.
The dingy cutworm was present in Manitoba on sunflowers (61) and in Deveron on field crops. (77)
1946. Can. Insect Pest Rev. 24.
The dingy cutworm was present in Lethbridge, Alberta, at light traps. (104)

1949. Can. Insect Pest Rev. 27.
The dingy cutworm was present in Norfolk County, Ontario, on tobacco (64); in Cedar Springs, Ontario, on common mallow (128); and in Kent and Norfolk, Ontario, on tobacco. (164)
1950. Can. Insect Pest Rev. 28.
The dingy cutworm was present at Blenheim, Ontario, on tobacco (128); in southwestern Ontario on vegetable crops (147); at Marmora, Ontario, on meadows (171); and in Ontario on garden crops. (254)
1951. Can. Insect Pest Rev. 29.
The dingy cutworm was present at Marmora, Ontario, on potato stalks. (66)
1958. Can. Insect Pest Rev. 36.
The dingy cutworm was seen in British Columbia in gardens and fields. (252)
1959. Can. Insect Pest Rev. 37.
The dingy cutworm was taken in Chatham, Ontario, in light traps. (237)
1960. Can. Insect Pest Rev. 38.
Feltia ducens was taken in light traps at Chatham, Ontario. (223-224)
1961. Can. Insect Pest Rev. 39.
Feltia ducens was taken in light traps at Chatham, Ontario. (209-210)
1962. Can. Insect Pest Rev. 40.
Feltia ducens was taken in light traps at Chatham, Ontario. (93)
1963. Can. Insect Pest Rev. 41.
Feltia ducens was numerous in a few fields of flue-cured tobacco in Norfolk County, Ontario. (92) *Feltia ducens* was taken near Delhi, Ontario. (127) *Feltia ducens* - *subgothica* attacked tobacco. (220)
1964. Can. Insect Pest Rev. 42
The dingy cutworm was present at Asquith, Saskatchewan, in stubble (142, 174) and in Norfolk County, Ontario, on tobacco. (194)
1966. Can. Insect Pest Rev. 44.
The dingy cutworm was present at Clavet, Saskatchewan, on wheat stubble. (2)
- Chittenden, F. H. 1898. Insects injurious to beans and peas. U. S. Dep. Agr., Yearbook of Agr.:233-260.
Numerous leaf-feeding caterpillars feed upon the foliage of leguminous garden plants, of which cutworms of several species are among the most important. One of the common forms found on peas and beans is the western striped cutworm (*Feltia subgothica* Haw.), which is widely distributed and injurious. (257)
- Chamberlin, F. S. and N. Allen. 1957. Tobacco cutworms. How to control them. U. S. Dep. Agr. Leaflet 417:1-8.
The dingy cutworm is grayish brown and has a broad, buff, gray stripe down the back. This species (*Feltia subgothica*) is remarkably hardy and

is not easily destroyed by plowing. It is one of the more common species in Tennessee, Virginia, and to the north. (4)

Clark, N. 1938. What's new in farm science. Wisc. Agr. Exp. Sta. Bull. 440:1-95.

Feltia ducens was one of four species of cutworms which caused damage in Wisconsin. A poison bait formula is given and habits of cutworms and natural control are discussed. (19-21)

Claypole, E. W. 1885. Entomology by the electric lamp. Can. Entomol. 117-119.

Adults of *Agrotis subgothica* were taken about arc-lamps in the middle of June in Akron, Ohio. (118)

Cook, A. J. 1875. Insects injurious to the farm, garden and orchard. 13th Annu. Rep. Secr. State Bd. Agr. Mich.:106-152.

A general description is given for cutworms. A plate of the dingy cutworm is shown. (110)

Cook, W. C. 1920. Cutworms and army worms. Office Minn. State Entomologist, Univ. Farms, Circ. 52:1-8.

Cutworm control, life histories, and habits are discussed. *Feltia ducens* is included in a key for common Minnesota cutworms. (4)

Cook, W. C. 1934. Cutworms and armyworms. Minn. Agr. Exp. Sta. Circ. 48:1-8.

The dingy cutworm is brownish tan, similar to the dark-sided cutworm. There are stripes on the sides, notched on top of each segment. Sometimes there are faint diagonal markings present. (4) A field key for the identification of Minnesota cutworms is included. (3)

Crosby, C. R. and M. D. Leonard. 1917. Manual of vegetable garden insects. The Macmillan Co., New York. 391 pp.

The egg, larva, pupa, and adult of the dingy cutworm are described and the life history is discussed. Food plants include corn, wheat, grasses, clover, strawberry, bean, pea, squash, cucumber, tomato, sweet potato, cabbage, and horseradish. (271-272)

Crumb, S. E. 1915. A key to the cutworms affecting tobacco. J. Econ. Entomol. 8:392-396.

The larva of *Feltia ducens* (=subgothica) has been bred from egg to adult and no character has been found by which it may be distinguished from the larva of *Feltia jaculifera*. (392)

Crumb, S. E. 1927. The armyworms. Bull. Brooklyn Entomol. Soc. 22:1-306.

A key is given to the species of noctuid larvae which have the armyworm habit of migrating in numbers, their U. S. distribution, food plants, and description of the mature larvae. The dingy cutworm (*Feltia ducens* Wlk.) is included in this key. (41, 44, 174)

Crumb, S. E. 1927. Tobacco cutworms and their control. U. S. Dep. Agr. Farmers' Bull. 1494:1-14.

The dingy cutworm (*Feltia ducens*) passes the winter in the larval state or egg stage. Some examples of cutworm baits are given. (4-5)

- Crumb, S. E. 1929. Tobacco cutworms. U. S. Dep. Agr. Tech. Bull. 88:1-180.
According to this author, *Feltia ducens* and *Feltia subgothica* are closely parallel in seasonal apportionment of their activities (61). A description of the life stages of *Feltia subgothica* is given (62-68). The main flight of the moths in the North occurs during August and the early part of September. (61)
- Crumb, S. E. 1932. The more important climbing cutworms. Bull. Brooklyn Entomol. Soc. 27:73-100.
The fully grown larva of the dingy cutworm is described. The dingy cutworm is found in the North throughout the breadth of the United States and Canada. (80-81)
- Crumb, S. E. 1956. The larvae of the Phalaenidae. U. S. Dep. Agr. Tech. Bull. 1135:1-356.
A description of the dingy cutworm larva and its geographical distribution are given. (88)
- Davis, G. C. 1896. Some injurious insects. I. Climbing cutworms. Mich. Agr. Exp. Sta. Bull. 132:1-30.
The dingy cutworm, (*Feltia subgothica*) Haw., is listed as a climbing cutworm. It is commonly found over the eastern United States and Canada. (7)
- Dod, F. H. W. 1911. Further notes on Alberta Lepidoptera. Can. Entomol. 43:329-339.
The synonymy and disposition of type specimens were reviewed. (334)
- Ficht, G. A. 1940. Notes on Indiana Noctuidae. Proc. Indiana Acad. Sci. 49:243-253.
"F. *ducens* Wlk. (1402). Dingy cutworm. Common and destructive. Numerous from August through October."
"F. *subgothica* Haw. (1403). Dingy cutworm. Less numerous than *ducens*; occurring at approximately the same time." (244)
- Fitch, A. 1856. Entomology. No. 8. Cutworms. Country Gentleman 7:154-155, 171.
Agrotis subgothica was the most common species of *Agrotis* in New York. The adult is described. (171)
- Forbes, S. A. 1890. Notes on cutworms. 16th Rep. State Entomol. Ill.:84-97.
The dingy cutworm (*Agrotis subgothica*) was the most abundant cutworm in southern Illinois. It damaged meadows and clover fields and its preference for clover was quite decided. A description of the larval stage is given. (88-89)
- Forbes, S. A. 1904. The more important insect injuries to Indian corn. Univ. Ill. Agr. Exp. Sta. Bull. 95:331-399.
The dingy cutworm, *Feltia subgothica* Haw., is one of the corn cutworms. The plant is cut off when young at or near the surface of the ground by a whitish, grayish, or blackish caterpillar frequently found in the earth near the injured plant. (346-347)

- Forbes, S. A. 1905. Noxious and beneficial insects. Twenty-third Ill. State Entomol. Rep.:1-273.
The dingy cutworm is one of several species of corn cutworms. *Feltia subgothica* Haw. and *Feltia jaculifera* are remarkably alike and sometimes are called *Agrotis tricola* or *A. herilis*. (26-28)
- Forbes, W. T. M. 1923. Trap-lantern record at Ithaca, New York. (Lepidoptera) Can. Entomol. 55:151-158.
This paper gives seasonal records at Ithaca for the more common species of Lepidoptera taken at light in a trap during 1919 and 1920. The dingy cutworm (*Feltia subgothica*) is included in the list of species of economic importance. (153)
- Forbes, W. T. M. 1954. Lepidoptera of New York and neighboring states. Cornell Exp. Sta. Memoir. 329:1-433.
A detailed description of the moth of *Agrotis ducens* Walker is given. The author considers *subgothica* of authors, perhaps Haworth; *jaculifera* variety, Guenée, including Holland plate 22; figure 21 *subgothica* as synonyms of *Agrotis (Feltia) ducens*. (46)
- French, G. H. 1878. Insects injurious to the vegetable garden. Trans. Ill. State Hort. Soc. for 1877-1878. 11:179-203.
The unique characters of the dingy cutworm larva, pupa, and adult are described. (190-191)
- French, G. H. 1878. Moths - Lepidoptera. 7th Rep. State Entomol. Ill.: 79-106.
The gothic dart is the species *Agrotis subgothica* Haw. The larva is the dingy cutworm. This cutworm is about an inch long when it is fully grown. They remain in the larva state longer than other species because they do not change to pupae before July. (89-90)
- French, G. H. 1878. Lepidoptera. 7th Rep. State Entomol. Ill.:135-268.
Agrotis subgothica, Haw. Gothic Dart. This species is found over quite a wide range of territory, from the Atlantic district to Colorado. A description of life stages is given. (204-205)
- Frost, S. W. 1955. Cutworms of Pennsylvania. Penn. Agr. Exp. Sta. Bull. 596:1-29.
"This common species often cuts off plants at the surface of the ground. The dingy cutworm is widely distributed in Canada and Northern United States. The moths begin to emerge in July and are in flight until September." (18-19)
- Garman, H. 1892. Some common pests of the farm and garden. Ky. Agr. Exp. Sta. Bull. 40:1-51.
The dingy cutworm is especially injurious in gardens and fields. The dingy cutworm produces a single brood each year. They destroy young plants. (21-22)
- Garman, H. 1895. Cutworms in Kentucky. Ky. Agr. Exp. Sta. Bull. 58:89-109.
The dingy cutworm (*Feltia subgothica*) appears in the spring. (96)

- Ghiradella, H. 1971. Fine structure of the Noctuid moth ear. I. The transducer area and connections to the tympanic membrane in *Feltia subgothica* Haworth. J. Morph. 134:21-27.
The ears of the noctuid moths appear to be unique among auditory organs in their extreme simplicity. Adults of the dingy cutworm *Feltia subgothica* (Haworth) were used for this study. (21)
- Gibson, A. 1912. Cutworms and armyworms. Can. Dep. Agr., Div. Entomol. Bull. 3:1-29.
In the United States, the dingy cutworm (*Feltia subgothica*) is a serious enemy to corn, wheat, and early vegetables, and has been found climbing fruit trees and shrubs to devour the buds and leaves. A description of the appearance of the dingy cutworm is given. (25)
- Gibson, A. 1915. Cutworms and their control. Can. Dep. Agr., Entomol. Br. Bull. 10:1-31.
"Larvae of *Feltia ducens* have been found in spring and in September. In eastern Canada moths are abundant in August and in western Canada about a month earlier."
- Gillette, C. P. 1891. Notes and experiments upon injurious insects and insecticides. Iowa Agr. Exp. Sta. Bull. 12:505-562.
The dingy cutworms (*Agrotis subgothica* and *A. tricosia*) are very abundant garden species and are also common in corn fields. The moths were captured from July through September. The author combines the two species because they are very similar. (539-540)
- Gossard, H. A. 1917. Cutworms, their habits, characteristics and means of control. Ohio Agr. Exp. Sta. Mon. Bull. 2(3):85-90.
The dingy cutworm (*Feltia subgothica*) is listed as one of the most common and destructive cutworms in Ohio. "Their commonest and most effective enemies are parasitic flesh flies which lay their eggs just behind the head of the cutworm." (85-90)
- Grote, A. R. and C. T. Robinson. 1868. Notes on the North American Lepidoptera in the British Museum and described by Mr. Francis Walker. Trans. Amer. Entomol. Soc. 2:67-88.
"Part IX.-1856. *Feltia ducens* Walk., p. 203 = *Agrotis subgothica*, Haw." (77)
- Grote, A. R. 1873. A study of North American Noctuidae. Bull. Buffalo Soc. Nat. Sci. 1:95-128.
"*Agrotis subgothica* Haworth, *Agrotis jaculifera*, Guenée, p. 262, plate 5, fig. 4 Habitat, Atlantic District; Colorado Territory (coll. Theo. L. Mead, No. 62)."
- Grote, A. R. 1875. Preliminary list of the Noctuidae of California. Can. Entomol. 8:25-28.
Two specimens of *Agrotis subgothica* were collected on Vancouver Island, British Columbia. (27)
- Grote, A. R. 1891. Correspondence. Can. Entomol. 23:202.
This is Grote's reply to Tutt's article on the synonymy of *tritici*, *subgothica*, and *jaculifera*.

- Grote, A. R. 1891. The male genitalia and the subdivisions of *Agrotis*. Can. Entomol. 23(7):147-152.
The synonymy of *tricosa-jaculifera-subgothia* is discussed. (151)
- Grote, A. R. 1896. A reply to Professor Smith. Can. Entomol. 28(12):301-302.
The synonymy of *Agrotis subgothica* is discussed.
- Guenée, A. 1852. Species Général des Lépidoptères. 1:262. Pl. 5, fig. 4.
This is the original description of *Agrotis jaculifera* in French. (262)
- Hart, C. A. 1903. Synopsis of insect collections for distribution to Illinois High Schools. Ill. State Lab. Nat. Hist.:7-64.
115. *Feltia subgothica* Haw. (*Agrotis*). Gothic Dart=moth; l., Dingy Cutworm. F., grain crops, garden vegetables, etc. H. as young larva, becoming destructive in May and early June, enters earth and forms oval cell in which it remains a month or more and then pupates; I, July to end of Sept. Adults common at electric lights. Very abundant and destructive. See No. 108. Outer third of wings pale with dark outer border, latter invaded by two acute points from pale area (the "Σ mark"); hind wings of pale white with dark border. (30)
- Haworth, A. H. 1810. Lepidoptera Britannica. Entomol. Soc. London. 512 pp.
This is the original description (in Latin) of *Noctua (Feltia) subgothica*. (224)
- Holland W. J. 1968. The moth book. A guide to the moths of North America, Dover Publ., Inc., New York. 479 pp.
This common species, *Feltia subgothica* (Haw.), the subgothic dart, is found in the northern portions of the U. S. and also in Canada. The moth is illustrated in Plate XXII. The larva is one of the most common cutworms, but is found more abundantly in the west than in the east. The species has a wide range over the northern portions of the United States and throughout southern Canada. (186)
- King, K. M. 1949. The light trap as an indicator of population trends in Noctuidae. Univ. Minn. Summ. Ph.D. Theses 3:59-62.
Feltia ducens was common by both flower collection and light trap, but a large and variable part of their flight periods was not represented by the flower collections.
- Knutson, H. 1944. Minnesota Phalaenidae (Noctuidae). The seasonal history and economic importance of the more common and destructive species. Minn. Agr. Exp. Sta. Tech. Bull. 165:1-128.
Collection records and seasonal history of *Feltia subgothica* are given. (25-26)
- Lintner, J. A. 1874. Notes on some New York Noctuidae, etc. Entomol. Contributions 3:157-167. (from Rep. N. Y. State Cabinet Nat. Hist. 26).
The author describes *Agrotis tricosa* as a new species and gives his interpretation of synonymy of *Agrotis subgothica* Haworth, *Agrotis tricosa* nov. sp., and *Agrotis herilis* Grote. Lintner's *tricosa* was later placed in the synonymy of *Feltia subgothica* (Haworth). (159-161)
- McDunnough, J. 1938. Check list of the Lepidoptera of the United States of America. Part 1. Macrolepidoptera. Mem. So. Calif. Acad. Sci. 1:1-275.

- The author assigned number 1442 to *ducens* Walker and considered *radiata* Harris as a synonym. The author assigned 1445 to *subgothica* Haworth and considered *jaculifera* Guenée and *tricosa* Lintner as synonyms.
- Marcovitch, S. 1928. Studies on toxicity of fluorine compounds. Tenn. Agr. Exp. Sta. Bull. 139:1-48.
"Fluorine compounds do not seem to be repellent to insects, and are therefore, in many cases, more effective than arsenicals, especially with the cutworm (*Feltia ducens*)." (43)
- Marcovitch, S. 1928. The relative toxicities of arsenicals and fluorine compounds to various organisms. J. Econ. Entomol. 21(1):108-114.
With the cutworm, *Feltia ducens*, sodium arsenite gave only 57% mortality in 72 hours while sodium fluosilicate gave 88%.
- Marcovitch, S. and W. W. Stanley. 1931. Control of tobacco insects in Tennessee. Tenn. Agr. Exp. Sta. Bull. 160:1-14.
The adult *Feltia ducens* is illustrated. Poison bait is suggested for control of cutworms in tobacco. (10-12)
- Marten, J. 1880. Noctuidae. (Owlet moths.) Ill. Dep. Agr. Trans. 18 Append.: 128-140.
The larva of *Agrotis subgothica* is described and the adult is illustrated. Larvae damage gardens in June, pupate in July, and moths emerge in September. (132)
- Martin, S. and F. B. Cotner. 1934. Serological studies of moth proteins with special reference to their phylogenetic significance. Ann. Entomol. Soc. Amer. 27:372-383.
Feltia ducens was used to demonstrate a definite serological differentiation between families.
- Merrill, L. G. and B. B. Pepper. 1956. Insects of asparagus and solanaceous crops. Econ. Ins. N. J. Ext. Bull. 295:1-14.
The distribution, description, importance, life history, and food habits of the dingy cutworm are discussed. (13-14)
- Merrill, L. G. and B. B. Pepper. 1957. Insects of corn and the cabbage family. Econ. Ins. N. J. Ext. Bull. 305:1-16.
The distribution, description, importance, life history, and food habits of the dingy cutworm, *Feltia subgothica*, are discussed. (9)
- Middleton, M. S. 1913. Cutworms and their control. Proc. Entomol. Soc. Br. Columbia. 3:36-37.
The dingy cutworm (*Feltia subgothica*) is commonly found in Canada.
"Poison bait is possibly the best all-round material for control. It would seem that epidemics of insect pests are followed by periods of comparative rest, due almost wholly to parasitic control."
- Morrill, A. W. 1919. The value of molasses and syrups in poisoned baits for grasshoppers and cutworms. J. Econ. Entomol. 12:337-343.
The use of poisoned baits against cutworms, including *Feltia subgothica*, is discussed. (341)

- Muesbeck, C. F. W. 1920. A revision of the North American species of Ichneumon-flies belonging to the genus *Apanteles*. Proc. U. S. Nat. Mus. 58:483-576. The dingy cutworm serves as a host to *Apanteles forbesi* (Viereck). The cocoons are white and solitary and seem to be widely distributed. (516)
- Orton, W. A. and F. H. Chittenden. 1917. Control of diseases and insect enemies of the home vegetable garden. U. S. Farmers' Bull. 856:1-72. There is a plate showing the dingy cutworm (*Feltia subgothica*) in the following stages: a, moth, or adult, wings expanded; b, larva, in curled-up position; c, moth, with wings folded. (16)
- Osborn, H. 1878-79. Report on noxious insects of the orchard. Trans. Iowa State Hort. Soc. 13:368-402.
A figure is given representing the Gothic Dart (*Agrotis subgothica*), which is the adult of the "western striped cutworm." (379)
- Packard, A. S. 1869. Guide to the study of insects. Henry Holt and Co., New York. 715 pp.
Agrotis subgothica adults resemble *A. cochrani*. The pupa remains in the ground longer, the adult emerging 4 to 6 weeks later than *A. cochrani*. (306)
- Packard, A. S. 1881. Half hours with insects. Estes and Lauriat. Boston. 384 pp.
The dingy cutworm (*Agrotis subgothica*) larva is described and the adult is illustrated. (22)
- Padilla, R. C. 1952. Aldrin y Dieldrin. Dos nuevos insecticidas orgánicos de grandes perspectivas para la protección de nuestra agricultura. Fitofilo 6(7):25-48.
Aldrin is recommended for the control of *Feltia subgothica*. (35-36)
- Palm, C. E. and W. D. Wylie. 1943. Biology and control of cutworms. 54th Rep. Cornell Agr. Exp. Sta. 1941:130.
Laboratory tests with various bait formulas indicated that sodium fluo-silicate and bran made the most efficient cutworm bait. The larvae of several species of cutworms were used in these tests, including the dingy cutworm (*Feltia ducens*).
- Perkins, G. H. 1894. Report of the entomologist. Seventh Annu. Rep. Vt. Agr. Exp. Sta.:1-151.
Feltia subgothica is one of the smaller cutworms, being, when fully grown, only an inch and a quarter long. The moth is lighter in color and much more distinctly marked than most species. (141)
- Puttler, Benjamin and S. E. Thewke. 1971. Field and laboratory observation of *Hexameris arvalis* (Nematoda:Mermithidae) a parasite of cutworms. Ann. Entomol. Soc. Amer. 64(5):1102-1106.
In Missouri and adjacent states, the nematode *Hexameris arvalis* Poinar-Gyrisco was commonly found in clover and alfalfa fields parasitizing the dingy cutworm, *Feltia subgothica*. (1102)
- Riley, C. V. 1867. A chapter on cutworms. Prairie Farmer 19:413-414.
Agrotis subgothica is the name of the dingy cutworm moth. The author calls the cutworm the striped cutworm. (414)

- Riley, C. V. 1869. Cutworms. The natural history of twelve distinct species. 1st Rep. Noxious, Beneficial and Other Insects Mo.:67-91.
The dingy cutworm (*Agrotis subgothica*) was destructive in gardens in Illinois. (82) A description of appearance and life history are given. (83)
- Riley, C. V. 1881. Notes and additions. Lepidoptera. Index and Suppl. to Mo. Rep.:54-58.
"Agrotis subgothica Harr. (Rep. I, p. 81). The moth represented under this name at Fig. 29, a, has since been described by Grote as *A. herilis*, and that at Fig. 29, b, has since been described by Lintner as *A. tricola*." (55)
- Riley, C. V. 1882. The noctuidae in the Missouri entomological reports. Papilio 2:41-44.
Agrotis subgothica is the same as *A. jaculifera*. (44)
- Roeder, K. D. 1967. Turning tendency of moths exposed to ultrasound while in stationary flight. J. Insect Physiol. 13:873-888.
A differential anemometer makes it possible to follow changes in the direction of the aerial wake created by a moth in stationary flight. The sign (right or left) of this direction indicates that certain Noctuid species, of which the one mostly used was the dingy cutworm (*Feltia subgothica*), attempt to turn away from a horizontal source of ultrasonic pulses over a wide range of sound intensities.
- Saunders, W. 1883. Cutworms. Insects injurious to fruits. J. B. Lippincott & Co. Philadelphia. 436 pp.
The striped cutworm, *Agrotis subgothica* Haworth, is an ash gray color with broad, dark, longitudinal lines and several narrow lighter ones. (328)
- Sherman, F., Jr. 1914. Insect enemies of corn. North Carolina Dep., Agr. Bull. 35:1-56.
Dingy cutworms (*Feltia subgothica* Haw.) were captured on Sept. 12, 27, 1904: Coll. Mr. Brimley. (17)
- Slingerland, M. V. 1893. Notes from the Cornell Insectary. I. Some results of a trap-lantern experiment. Can. Entomol. 25:81-86.
Feltia subgothica was excessively abundant in New York. More specimens of this moth were taken than any other species of insect. (85)
- Singerland, M. V. 1895. *Feltia subgothica*, Haworth, or *Agrotis* (Subgen. *Agronoma*) *Jaculifera*, Guenée, which? Can. Entomol. 27:301-308.
The synonymy of *subgothica*, *jaculifera*, and *tritici* is discussed.
- Singerland, M. V. 1895. Climbing cutworms. Cornell Univ. Agr. Exp. Sta. 104:641-685.
A description of the appearance, distribution, habits, and life history of the dingy cutworm (*Agrotis subgothica*) is given. (660-665)
- Singerland, M. V. 1896. The *Agrotis subgothica* of Haworth, again. Can. Entomol. 28(12):295-299.
The synonymy of *Agrotis subgothica* is discussed.

- Smith, J. B. 1891. List of the Lepidoptera of Boreal America. Philadelphia, Amer. Entomol. Soc. 1891.:1-124.
This publication was an attempt to list all the described Lepidoptera of Boreal America. 1713. *Feltia subgothica* Steph. (38)
- Smith, J. B. 1896. Concerning *Feltia*, and other matters. Can. Entomol. 28:4-8.
Synonymy, including synonymy of *subgothica*, is discussed.
- Speare, A. T. 1920. Further studies of *Sorosporaella uvella*, a fungous parasite of Noctuid larvae. J. Agr. Res. 18:399-438.
"The dingy cutworm (*Feltia subgothica*) was inoculated with *S. uvella* either by direct contact, by spraying, or by feeding." (432)
- Stanley, W. W. 1936. Studies of the ecology and control of cutworms in Tennessee. Tenn. Agr. Exp. Sta. Bull. 159:1-16.
The dingy cutworm (*Feltia ducens* Walker and *Feltia subgothica* Haworth) is of great economic importance in Tennessee. A rather wet fall, with the remainder of the year dry, favored adult abundance of *F. subgothica*. A dry fall favors the abundance of *F. ducens*. (6)
- Stedman, J. M. 1902. The more important insects injurious to wheat in Missouri. 34 Annu. Rep. Mo. State Bd. Agr.:55-141.
The dingy cutworm has been found to be the most important pest causing damage to wheat. A description of the appearance, distribution, habits, and life history of *Feltia subgothica* is given. (115-117)
- Stedman, J. M. 1906. The more important insects injurious to corn in Missouri. Mo. Bd. Agr. Rep. 38:271-286.
One of the most important cutworms found to be doing great harm to corn was the dingy cutworm, *Feltia subgothica*. A life history is given for the dingy cutworm. (272-274)
- Stephens, J. F. 1829. Illustrations of British Entomology. Haustellata 2:126.
Feltia subgothica Haworth is a scarce insect in London and in Norfolk. A description of the moth of the dingy cutworm is given.
- Tietz, H. M. 1951. The Lepidoptera of Pennsylvania. A manual. Penn. Agr. Exp. Sta. Bull.:1-194.
Life history: Crumb, 1929 U.S. Dep. Agr. Tech. Bull. 88:63 egg, larva.
A list of food plants of the dingy cutworm is given. (53)
- Tietz, H. M. 1972. An index to the described life histories, early stages and hosts of the macrolepidoptera of the continental United States and Canada. A. C. Allyn, Sarasota, Fla. 1-2:1-1041.
This publication includes a list of periodicals, journals, bulletins, and memoirs which deal with lepidopterous life histories and host plants. It also contains a list of insect common names and another list of common names of plants upon which lepidopterous insects feed. The species names are listed alphabetically with synonyms, references dealing with life history, and food plants. (618-619)
- Turner, W. B. 1918. Female Lepidoptera at light traps. J. Agr. Res. 14: 135-149.

It is probable that four species (*Feltia subgothica* Haworth, *F. annexa* Treitschke, *F. gladiaria* Morrison, and *F. jaculifera* Guenée) were collected at light traps at Hagerstown, Md. (136)

Tutt, J. W. 1896. On *Agrotis tritici*, Linn., *A. subgothica*, Haw., and *Agrotis jaculifera*, Gn. Can. Entomol. 28:17-24.
The synonymy of *Agrotis tritici* and *Agrotis subgothica* is argued.

United States Department of Agriculture
Cooperative Economic Insect Report¹

The Bureau of Entomology of the U. S. Department of Agriculture, in co-operation with the State Entomologists, Entomologists of the Agricultural Experiment Stations, State Departments of Agriculture, Agricultural Colleges, and other entomological agencies, organized an Insect Pest Survey in 1921. This survey attempted to assemble and disseminate all data on the distribution, seasonal and regional fluctuations of insect abundance, weather data as related to insect outbreaks, phenological data, and other miscellaneous information. Each year an annual digest of the important facts gathered during the past season was published in the form of Insect Pest Summaries.

From 1921 to 1950, this publication was entitled "The Insect Pest Survey Bulletin." This was not bound or indexed for the years 1942-1949. In 1951, the Bulletin was replaced by the "Cooperative Economic Insect Report," Vol. 1, No. 1, July 31, 1951. No explanation is given in this publication for the name change.

Since these references are too numerous to list separately, they are listed by years.

1922. U. S. Dep. Agr. Insect Pest Surv. Bull. 2.
The dingy cutworm was taken from alfalfa in Nebraska (39) and from light traps in Iowa. (265)
1924. U. S. Dep. Agr. Insect Pest Surv. Bull. 4.
The dingy cutworm was taken from clover or rankly growing weeds in Mississippi. (35)
1925. U. S. Dep. Agr. Insect Pest Surv. Bull. 5.
The dingy cutworm was found on truck crops in Mississippi (67), on corn in Iowa (100), and on tobacco in Virginia and Kentucky. (134)
1926. U. S. Dep. Agr. Insect Pest Surv. Bull. 6.
The dingy cutworm was found to be damaging flax fields in Minnesota. (130)
1927. U. S. Dep. Agr. Insect Pest Surv. Bull. 7.
The dingy cutworm was found on corn in Nebraska. (39, 145)
1931. U. S. Dep. Agr. Insect Pest Surv. Bull. 11.
The dingy cutworm was found to be abundant in gardens in Nebraska. (163)
1932. U. S. Dep. Agr. Insect Pest Surv. Bull. 12.
The dingy cutworm was causing trouble in gardens in Washington. (133)

¹Issued by Plant Protection and Quarantine Programs, Animal And Plant Health Inspection Service, U. S. Department of Agriculture.

1933. U. S. Dep. Agr. Insect Pest Surv. Bull. 13.
The dingy cutworm was numerous enough to check the growth of new shoots arising from the crowns of alfalfa plants after the crop was mowed in September. Many dead larvae were found after several cold nights. (298)
1934. U. S. Dep. Agr. Insect Pest Surv. Bull. 14.
The dingy cutworm was very abundant in Tennessee. (96)
1935. U. S. Dep. Agr. Insect Pest Surv. Bull. 15.
The dingy cutworm was causing serious damage to early gardens in Clarks-ville, Tenn. (29), to alfalfa in Kansas (66), and to corn, flax, onions, soybeans, and hawthorn raspberry in Minnesota. (219-220)
1937. U. S. Dept. Agr. Insect Pest Surv. Bull. 17.
The dingy cutworm was abundant in timothy and bluegrass pastures in Tennessee (73) and in alfalfa and wheat fields in Kansas. (74)
1938. U. S. Dep. Agr. Insect Pest Surv. Bull. 18.
The dingy cutworm was seen in pastures in Kansas (55), on tobacco plants in North Carolina (145), in South Haven, Michigan (153), and on gardens in eastern Nebraska. (154)
1953. Coop. Econ. Insect Report. 3.
The dingy cutworm (*Feltia* sp.) was scattered throughout the southern half of the state of Minnesota. The heaviest concentrations of cutworms, including the dingy cutworm, were found feeding on flax in the south central and southwestern parts of Minnesota. (154)
1954. Coop. Econ. Insect Report. 4.
Many red clover and alfalfa fields in creek and river bottoms in central and extreme southwest Missouri have infestations of one dingy cutworm (*Feltia subgothica*) per square foot. Damage was very light. Most of the cutworms were in third and fourth instar stages. (268) Some red clover along the Missouri River averages 2-3 dingy cutworm larvae per square foot. (306)
1955. Coop. Econ. Insect Report. 5.
The dingy cutworm (*Felta subgothica*) infestation was lighter than usual in some red clover fields in the central area, but still ranged from 2-5 larvae per square foot. (233)
1956. Coop. Econ. Insect Report. 6.
The dingy cutworm (*Feltia subgothica*) destroyed cucumbers and raspberry plants in northwestern Pennsylvania. (151) Heavy outbreaks of dingy cutworm occurred generally over the western half of Missouri in pastures and legumes early in the season. Heavy damage occurred to small corn over the central and northwest areas. (231) Larvae of the dingy cutworm (*Feltia subgothica*) up to one-half grown averaged approximately one per crown of alfalfa in grassy fields of the southwest area of Missouri. (265) The dingy cutworm was conspicuous in red clover at Bombay Hook and Kenton in Delaware. (388) Heavy flights of adult dingy cutworms in central and northern areas of Missouri were underway. Light trap catches averaged nearly 100 per night in Columbia. (924) *Feltia subgothica* was the most abundant cutworm species caught at black light traps in the fall in Maryland. (1135)

1957. Coop. Econ. Insect Report. 7.
Heavy numbers of the dingy cutworm (*Feltia subgothica*) occurred in the northwest area in drought-damaged pastures and legumes and by early June some injury to small corn appeared (Missouri). (102) Heavy numbers of dingy cutworm, ranging from 1-5 per square foot, occurred in many of the drought-injured pastures, especially in the northwest and north central areas. (103) During August and September, moths of the dingy cutworm (*Feltia subgothica*) appeared in large numbers in the trap at Fairland, Maryland. (947)
1958. Coop. Econ. Insect Report. 8.
Feltia subgothica attacked corn (284) and bluegrass. (286) Scattered fields, particularly in the northern New Madrid and Scott counties in Missouri, had light to very heavy infestations of the dingy cutworm. (287) The average infestation was 1-2 half grown dingy cutworm larvae per square yard in red clover in Saline County, Missouri. Infestation was much lighter in central and southwest areas. (361)
1959. Coop. Econ. Insect Report. 9.
Dingy cutworm damage to a few fields of corn up to 36 inches high necessitated replanting in the Missouri River bottom in the central portion of the state and a very few fields in the northwest river bottom. (202) The dingy cutworm was generally lighter in pastures, alfalfa, and red clover. The heaviest infestations averaged 1-2 per square yard in a few central area red clover fields. (204)
1960. Coop. Econ. Insect Report. 10.
The dingy cutworm caused extensive damage to corn in Missouri (199, 454, 482, 510) and to corn in Illinois. (547)
1961. Coop. Econ. Insect Report. 11.
The dingy cutworm was causing damage to corn in Missouri (443, 497) and Illinois. (93, 497)
The larvae of *Feltia ducens* were active in alfalfa in Nebraska. (225)
1962. Coop. Econ. Insect Report. 12.
The dingy cutworm damaged alfalfa in Nebraska (1954), clover and alfalfa in Illinois (454), garden plants in Missouri (490), chrysanthemums in Nebraska (495), grassland in Missouri (514), corn in Illinois and Missouri (550), and corn in Missouri. (583)
1963. Coop. Econ. Insect Report. 13.
The dingy cutworm infested corn in Missouri (150), chrysanthemums in Nebraska (377), clover and alfalfa in Illinois (427), corn in Iowa, and was taken in light traps in Wisconsin (1089), light traps in Ohio (1159), and light traps in Colorado. (1220, 1249)
1964. Coop. Econ. Insect Report. 14.
The dingy cutworm infested wheat fields in Nebraska (121), corn in Missouri (131, 566, 602), alfalfa in Nebraska (161), vegetable crops in Missouri (269), corn in Ohio (638), and was taken in light traps in Michigan (1081) and black light traps in Delaware and Ohio. (1105)
1965. Coop. Econ. Insect Report. 15.
The dingy cutworm was taken on corn in Ohio (159), on corn in Pennsylvania (600), on sugar beet fields in New York (646), and on corn in Iowa. (708)

1966. Coop. Econ. Insect Report. 16.
The dingy cutworm damaged corn in Missouri (108), field peas in Pennsylvania (641), and alfalfa in Wisconsin. (1080)
1967. Coop. Econ. Insect Report. 17.
The dingy cutworm caused damage to pea fields in Pennsylvania (208), asparagus in Delaware (345), and corn in Nebraska. (503)
1968. Coop. Econ. Insect Report. 18.
The dingy cutworm was taken on corn in Nebraska (109, 154), onions in Pennsylvania (391), soybeans in Iowa (636), at collection stations in Michigan (884, 901), and at light traps and in alfalfa in Wisconsin. (920)
1970. Coop. Econ. Insect Report. 20.
The dingy cutworm caused damage to corn in Nebraska (382, 400, 441) and was taken in light traps in South Dakota. (823)
1971. Coop. Econ. Insect Report. 21.
The dingy cutworm caused damage to cornfields in Nebraska (147) and corn in Pennsylvania (427). It was taken at black light traps in New Hampshire (631) and at collection stations in Michigan. (657)
- Wadley, F. M. 1920. Note on *Eriopyga incincta*. J. Econ. Entomol. 13:147-150.
Feltia subgothica, usually the most common cutworm, was scarce. At the same time, the cutworm-like caterpillar of *Eriopyga incincta* was abundant. (148)
- Walkden, H. H. and D. B. Whelan. 1942. Owlet moths (Phalaenidae) taken at light traps in Kansas and Nebraska. U.S. Dep. Agr. Circ. 643:1-25.
This circular contains data on the distribution, seasonal flight records, and peaks of abundance of Noctuid moths in the Missouri Basin obtained by means of light traps. The dingy cutworm (*Feltia subgothica*) was found to be abundant and of economic importance. (1)
- Walkden, H. H. 1943. Cutworm and armyworm populations in pasture grasses, waste lands and forage crops. J. Econ. Entomol. 36:376-381.
A sack-trap method of collecting larvae was used and over a 4-year period *Feltia subgothica* was the most abundant species found. The dingy cutworm was found to be most abundant in March and early April. The dingy cutworm was the most abundant species found on overgrazed pastures. (378-379)
- Walkden, H. H. 1950. Cutworms, armyworms and related species attacking cereal and forage crops in the Central Great Plains. U. S. Dept. Agr. Circ. 849:1-52.
The dingy cutworm is one of the most widely distributed species. It is rarely a destructive species west of the Mississippi. The dingy cutworm is commonly found feeding on pasture grass and roadside vegetation. There is a single generation annually. The moths are most abundant during September. (21-23)
- Walker, F. 1856. List of the specimens of lepidopterous insects in the collection of the British Museum. Part IX:203.
A description of the male adult moth of the species *Feltia ducens* is given.

- Walker, F. 1856. List of the specimens of lepidopterous insects in the collection of the British Museum. Part X. Noctuidae:308-327.
Agrotis jaculifera, Guen. Noct. i. 262, 417, Canada.
A description of appearance of the dingy cutworm is given. (327)
- Waters, H. A. 1943. Rearing insects that attack plants. Amer. Assoc. Adv. Sci. Pub. 20:3-28.
A rearing technique is described that is suitable for rearing armyworm, yellow armyworm, black cutworm, spotted cutworm, speckled cutworm, and dingy cutworm. (15-16)
- Webster, F. M. 1889. The dingy cutworm. (*Agrotis subgothica* Haw.). Insect Life. 2:29.
The dingy cutworm (*Agrotis subgothica* Haw.) was found by Mr. Henry Nobes in 1886 to be destroying ripening strawberries. The cutworms occurred in great numbers under the straw mulch.
- Wedgeworth, H. H. and C. B. Anders. 1926. Poisoned bait for the control of cutworms. Miss. Agr. Exp. Sta. Circ. 62:1-3.
Feltia duceus (dingy cutworm) caused considerable damage to tomato plants in the field in Mississippi. Experiments with different baits are described. (1-3)
- Weir, J. J. 1891. Note on *Agrotis subgothica*, Haw. The Entomologist 24:49-50.
The synonymy of the dingy cutworm is discussed.
- Whelan, D. B. 1935. A key to the Nebraska cutworms and armyworms that attack corn. Nebraska Agr. Exp. Sta. Res. Bull. 81:1-27.
In addition to the key, a description of the larva, distribution, seasonal abundance, habits, and food plants of the dingy cutworm are discussed. (18)
- Whitcomb, W. D. 1928. An experiment in trapping cutworms. J. Econ. Entomol. 21:592-598.
The dingy cutworm was collected and reared from chickweed sods used as cutworm traps. (595)
- Wood, W. 1839. Index Entomologicus. G. Willis Publishing Co., London. 298 pp.
"149 *Subgothica* Gothic Dart
St. 2, p. 126, t. 22, f3, G104 *Agrotis*. Near London and Barnstaple, Devon: but very scarce. June." (36)

Index

This index was prepared on the computer from keywords indicated on the index card file. Information may be retrieved by author's name (left-hand column) and year (right-hand column); by host plant, by geographical locality, and by subject, i.e., larval description, life history, outbreak, geographical distribution, etc. The Canadian Insect Pest Review is abbreviated as CIPR, the Insect Pest Survey as IPS, and the Cooperative Economic Insect Report as CEIR.

AGROTIS* GROTE, GENITALIA-MALE TAXONOMY	074	1891
AGROTIS-COCHRANI* PACKARD, SEASONAL-DIST	096	1869
AGROTIS-JACULIFERA SYNONYMS* TUTT. AGROT	123	1896
AGROTIS-JACULIFERA JACULIFERA-AGROTIS TR	110	1895
AGROTIS-SUBGOTHICA* BETHUNE, CANADA GEOG	007	1869
AGROTIS-TRITICI* SLINGERLAND, SYNONOMY A	110	1895
AGROTIS-TRICOSA SYNONYMS* RILEY, AGROTIS	104	1881
AINSLIE, CRAMBUS-TETERRELLUS FELTIA-SUBGO	001	1917
ALBERTA* CIPR, LIGHT-TRAPS ALBERTA* CIP	026	1946
ALBERTA* CIPR, LIGHT-TRAPS ALBERTA* CIP	014	1923
ALFALFA IL* CEIR, CORN MISSOURI CHRYSANT	164	1965
ALFALFA IOWA LIGHT-TRAPS* IPS, NEBRASKA	124	1922
ALFALFA KANSAS CORN FLAX ONIONS SOYBEANS	133	1935
ALFALFA MISSOURI* CEIR, LARVAL-POPULATIO	137	1954
ALFALFA NEBRASKA ILLINOIS GARDEN-PLANTS	147	1962
ALFALFA NEBRASKA* CEIR, CORN MISSOURI IL	146	1961
ALFALFA RED-CLOVER* CEIR, CORN MISSOURI	144	1959
ALFALFA TOBACCO ONTARIO SASKATCHEWAN* C	022	1942
ALFALFA VEGETABLE-CROPS OHIO* CEIR, WHEA	149	1964
ALFALFA WHEAT KANSAS* IPS, TIMOTHY BLUEG	134	1937
ALFALFA WISCONSIN* CEIR, CORN MISSOURI P	151	1966
ALFALFA* ANONYMOUS, KANSAS ALFALFA* ANO	003	1935
ALFALFA* IPS, KANSAS ALFALFA* IPS, KANSA	131	1933
ALOKIN* PADILLA, DIELDRIN CHLORINATED-HY	098	1952
ANONYMOUS, KANSAS ALFALFA* ANONYMOUS, KAN	003	1935
ANONYMOUS, CHILE FELTIA-SUBGOTHICA CORN B	002	1921
APANTELES-FORBESI* MUESEBECK, APANTELES	093	1920
APPLE CLIMBING-BEHAVIOR* BRITTON, CONNEC	011	1927
ARNOTT, TOBACCO ONTARIO POISON-BAITS* AR	004	1943
ASPARAGUS DELAWARE CORN NEBRASKA* CEIR,	152	1967
BALDUF, OVIPOSITION HELIONTHUS LIFE-HISTO	005	1931
BALDUF, OVIPOSITION OHIO ILLINOIS* BALDU	012	1942
BEADLE, WISCONSIN ECONOMIC-IMPORTANCE* B	006	1938
BEAN PEA SQUASH CUCUMBERTOMATO SWEET-POT	044	1918
BEANS GRASSES PASTURE* ANONYMOUS, CHILE	002	1921
BETHUNE, CANADA GEOGRAPHICAL-DISTRIBUTION	007	1869
BLACK-LIGHT-TRAPS NEW-HAMPSHIRE MICHIGAN	155	1971
BLACKMORE, BRITISH COLUMBIA VEGETABLES*	008	1918
BLICKENSTAFF, COMMON-NAMES SCIENTIFIC-NAM	009	1970
BLUEGRASS TENNESSEE ALFALFA WHEAT KANSAS	134	1937
BLUEGRASS MISSOURI* CEIR, CORN BLUEGRASS	143	1958
BOWLES, SYNONYMS COMMON-NAMES WESTERN-STR	010	1879
BRITISH-COLUMBIA* CIPR, FIELD-CROPS GARD	030	1958
BRITTON, CONNECTICUT APPLE CLIMBING-BEHAV	011	1927
BUTLER, SYNONMY* BUTLER, SYNONMY* BUTLER	013	1889
CABBAGE HORSE-RADISH* CROSBY, EGG-DESCRI	044	1918

CEIR.ALFALFA MISSOURI RED-CLOVER DELAWAR	140	1956
CEIR.CORN NEBRASKA LIGHT-TRAPS SOUTH-DAK	154	1970
CEIR.CORN NEBRASKA PENNSYLVANIA BLACK-LI	155	1971
CEIR.CORN MISSOURI PASTURES ALFALFA RED-	144	1959
CEIR.CORN BLUEGRASS MISSOURI* CEIR.CORN	143	1958
CEIR.CORN MISSOURI CHRYSANTHEMUMS NEBRAS	164	1963
CEIR.CORN MISSOURI ILLINOIS ALFALFA NEBR	146	1961
CEIR.CORN OHIO PENNSYLVANIA SUGAR-BEET N	150	1965
CEIR.CORN MISSOURI PEAS PENNSYLVANIA ALF	151	1966
CEIR.CORN NEBRASKA ONIONS PENNSYLVANIA S	153	1968
CEIR.CUCUMBERS RASPBERRY PENNSYLVANIA MI	139	1956
CEIR.LARVAL-POPULATIONS RED-CLOVER ALFAL	137	1954
CEIR.MINNESOTA FLAX* CEIR.MINNESOTA FLA	136	1953
CEIR.MISSOURI CORN ILLINOIS* CEIR.MISSO	145	1960
CEIR.PASTURES LEGUMES CORN MISSOURI PAST	141	1957
CEIR.PEAS PENNSYLVANIA ASPARAGUS DELAWAR	152	1967
CEIR.RED-CLOVER* CEIR.RED-CLOVER* CEIR	138	1955
CEIR.VEGETABLE-GARDENS ALFALFA NEBRASKA	147	1962
CEIR.WHEAT NEBRASKA CORN MISSOURI ALFALF	149	1964
CHAMBERLIN.LARVAL-DESCRIPTION MECHANICAL	039	1957
CHEMICAL-CONTROL ALORIN* PADILLA.DIELDR	098	1952
CHITTENDEN.BEANS PEAS WESTERN-STRIPED-CU	038	1898
CHLORINATED-HYDROCARBONS CHEMICAL-CONTRO	098	1952
CHRYSANTHEMUMS GRASSLAND CORN* CEIR.VEG	147	1962
CHRYSANTHEMUMS NEBRASKA CLOVER ALFALFA I	164	1963
CIPR.COLVER MISSISSIPPI SASKATCHEWAN* C	015	1924
CIPR.FIELD-CROPS SUNFLOWERS MANITOBA* C	025	1945
CIPR.FIELD-CROPS GARDEN-CROPS BRITISH-CO	030	1958
CIPR.FLAX ALFALFA TOBACCO ONTARIO SASKAT	022	1942
CIPR.FLOWERS OATS SASKATCHEWAN* CIPR.FL	024	1944
CIPR.GRASS-SOD ONTARIO* CIPR.GRASS-SOD	019	1936
CIPR.HOLLYHOCKS ONTARIO GRASS-TURF* CIP	017	1933
CIPR.LIGHT-TRAPS ONTARIO* CIPR.LIGHT-TR	031	1959
CIPR.LIGHT-TRAPS ONTARIO* CIPR.LIGHT-TR	033	1961
CIPR.LIGHT-TRAPS ONTARIO* CIPR.LIGHT-TR	034	1962
CIPR.LIGHT-TRAPS ALBERTA* CIPR.LIGHT-TR	026	1946
CIPR.LIGHT-TRAPS ONTARIO* CIPR.LIGHT-TR	032	1960
CIPR.LIGHT-TRAPS ALBERTA* CIPR.LIGHT-TR	014	1923
CIPR.ONTARIO LIGHT-TRAPS* CIPR.ONTARIO	021	1941
CIPR.ONTARIO TOBACCO MALLOW-COMMON* CIP	027	1949
CIPR.ONTARIO LIGHT-TRAPS* CIPR.ONTARIO	020	1938
CIPR.POTATOES ONTARIO* CIPR.POTATOES ON	029	1951
CIPR.QUEBEC VEGETABLES* CIPR.QUEBEC VEG	016	1931
CIPR.RASPBERRY ONTARIO* CIPR.RASPBERRY	018	1935
CIPR.TOBACCO ONTARIO* CIPR.TOBACCO ONTA	035	1963
CIPR.TOBACCO ONTARIO* CIPR.TOBACCO ONTA	036	1964
CIPR.TOBACCO ONTARIO FLOWERS VEGETABLES	023	1943
CIPR.VEGETABLES TOBACCO ONTARIO GRASS-ME	028	1950
CIPR.WHEAT SASKATCHEWAN* CIPR.WHEAT SAS	037	1966
CLARK.LARVAL-HABITS WISCONSIN POISON-BAI	040	1938
CLAYPOLE.LIGHT-ARC-LAMPS OHIO* CLAYPOLE	169	1885
CLIMBING-BEHAVIOR* BRITTON.CONNNECTICUT	011	1927
CLOVER ALFALFA IL* CEIR.CORN MISSOURI C	164	1963
CLOVER STRAWBERRY BEAN PEA SQUASH CUCUMB	044	1918
COLORADO LIGHT-TRAPS* LINOIS IOWA WISCO	148	1963
COLUMBIA VEGETABLES* BLACKMORE.BRITISH	008	1918

COMMON-NAMES WESTERN-STRIPED-CUTWORM JAC	010	1879
CONTROL PREDATORS PARASITES* GOSSARD, LAR	076	1917
CONTROL-RECOMMENDATIONS TENNESSEE TOBACC	086	1931
COOK, LARVAL-DESCRIPTION LARVAL-KEY MINN	043	1934
COOK, LARVAL-ILLUSTRATION* COOK, LARVAL-I	041	1875
COOK, POISON-BAITS LARVAL-KEY MINNESOTA*	042	1920
CORN BEANS GRASSES PASTURE* ANONYMOUS, C	002	1921
CORN FLAX ONIONS SOYBEANS RASPBERRY MINN	133	1935
CORN ILLINOIS* CEIR, MISSOURI CORN ILLIN	145	1960
CORN MISSOURI ALFALFA VEGETABLE-CROPS OH	149	1964
CORN MISSOURI PASTURES MARYLAND LIGHT-TR	141	1957
CORN NEBRASKA* CEIR, PEAS PENNSYLVANIA A	152	1967
CORN TOBACCO KENTUCKY IOWA* IPS, VEGETABL	126	1925
CORN VEGETABLE-GARDEN* GILLETTE, IOWA CO	069	1891
CORN WHEAT GRASSES CLOVER STRAWBERRY BEA	044	1918
CORN* CEIR, VEGETABLE-GARDENS ALFALFA NE	147	1962
CORN* STEDMAN, MISSOURI LIFE-CYCLE CORN*	118	1906
CROSBY, EGG-DESCRIPTION LARVAL-DESCRIPTIO	044	1918
CRUMB, CLIMBING-CUTWORMS GEOGRAPHICAL-DIS	049	1932
CRUMB, LARVAL-KEY TOBACCO* CRUMB, LARVAL-	045	1915
CRUMB, LARVAL-DESCRIPTION GEOGRAPHICAL-DI	046	1927
CRUMB, LARVAL-KEYS LARVAL-DESCRIPTION GEO	050	1956
CRUMB, SEASONAL-HISTORY POISON-BAITS* CR	047	1927
CRUMB, TOBACCO LIFE-HISTORY GEOGRAPHICAL-	048	1929
CUCUMBERTO POTO SWEET-POTATO CABBAGE HORS	044	1918
DAVIS, CLIMBING-CUTWORMS GEOGRAPHICAL-DIS	051	1896
DELAWARE CORN NEBRASKA* CEIR, PEAS PENNS	152	1967
DELAWARE LIGHT-TRAPS MARYLAND* CEIR, ALF	140	1956
DOD, SYNONYMY TYPE-SPECIMENS* DOD, SYNONO	052	1911
EAR-MOTH* GHIRADELLA, AUDITORY-RECEPTION	066	1971
ECONOMIC -IMPORTANCE* CHITTENDEN, BEANS	038	1898
ECONOMIC-IMPORTANCE* STANLEY, ECOLOGY EC	116	1936
ECONOMIC-IMPORTANCE* MERRILL, LIFE-HISTO	090	1957
ECONOMIC-IMPORTANCE HOST-RANGE SEASONAL-D	081	1944
ECONOMIC-IMPORTANCE* FORBES, NEW-YORK LI	061	1923
ECONOMIC-IMPORTANCE* CRUMB, TOBACCO LIFE	048	1929
ECONOMIC-IMPORTANCE* BEADLE, WISCONSIN E	006	1938
FEEDING-BEHAVIOR* FORBES, CORN FEEDING-B	056	1904
FELTIA-SUBGOTHICA* AINSLIE, CRAMBUS-TETE	001	1917
FELTIA-SUBGOTHICA CORN BEANS GRASSES PAS	002	1921
FICHT, INDIANA SEASONAL-DISTRIBUTION GEOG	053	1940
FITCH, NEW-YORK MOTH-DESCRIPTION* FITCH,	054	1856
FLAX ONIONS SOYBEANS RASPBERRY MINNESOTA	133	1935
FLAX SASKATCHEWAN* CIPR, TOBACCO ONTARIO	023	1943
FLAX* CEIR, MINNESOTA FLAX* CEIR, MINNES	136	1953
FLOWERS VEGETABLES FLAX SASKATCHEWAN* C	023	1943
FLUORINE-COMPOUNDS SODIUM-ARSENITE SODIU	085	1928
FORBES, CLOVER ILLINOIS LARVAL-DESCRIPTIO	055	1890
FORBES, CORN FEEDING-BEHAVIOR* FORBES, CO	056	1904
FORBES, MOTH-DESCRIPTION SYNONYMY GEOGRAP	062	1954
FORBES, NEW-YORK LIGHT-TRAPS ECONOMIC-IMP	061	1923
FORBES, SYNONYMS JACULIFERA-FELTIA LARVAL	057	1905
FRENCH, ILLINOIS GEOGRAPHICAL-DISTRIBUTIO	059	1878
FRENCH, ILLINOIS LARVAL-DESCRIPTION MOTH-	060	1878
FRENCH, ILLINOIS LARVAL-DESCRIPTION PUPAL	058	1878
FROST, PENNSYLVANIA GEOGRAPHICAL-DISTRIBU	063	1955

FRUIT-TREES* GIBSON.HOST-RANGE LARVAL-D	067	1912
GARDEN-CROPS BRITISH-COLUMBIA* CIPR.FIE	030	1958
GARDEN-PLANTS MISSOURI CHRYSANTHEMUMS GR	147	1962
GARMAN.KENTUCKY LIFE-CYCLE* GARMAN.KENT	064	1892
GARMAN.KENTUCKY SEASONAL-DISTRIBUTION*	065	1895
GEOGRAPHICAL-DISTRIBUTION LARVAL-DESCRIP	059	1878
GEOGRAPHICAL-DESTRIBUTION* FORBES.MOTH-	062	1954
GEOGRAPHICAL-DISTRIBUTION* FROST.PENNSY	063	1955
GEOGRAPHICAL-DISTRIBUTION MOTH-ILLUSTRAT	079	1968
GEOGRAPHICAL-DISTRIBUTION* MERRILL.ECON	089	1956
GEOGRAPHICAL-DISTRIBUTION ECONOMIC-IMPOR	090	1957
GEOGRAPHICAL-DISTRIBUTION* WALKDEN.LIGH	157	1942
GEOGRAPHICAL-DISTRIBUTION HERILIS-AGROTI	057	1905
GEOGRAPHICAL-DISTRIBUTION AGROTIS-SUBGOT	007	1869
GEOGRAPHICAL-DISTRIBUTION* FICHT.INDIAN	053	1940
GEOGRAPHICAL-DISTRIBUTION* DAVIS.CLIMBI	051	1896
GEOGRAPHICAL-DISTRIBUTION* CRUMB.LARVAL	050	1956
GEOGRAPHICAL-DISTRIBUTION LARVAL-DESCRIP	049	1932
GEOGRAPHICAL-DISTRIBUTION HOST-RANGE LAR	048	1929
GEOGRAPHICAL-DISTRIBUTION* CRUMB.LARVAL	046	1927
GHIRADELLA.AUDITORY-RECEPTION EAR-MOTH*	066	1971
GIBSON.HOST-RANGE LARVAL-DESCRIPTION FRU	067	1912
GIBSON.SEASONAL-DISTRIBUTION* GIBSON.SE	068	1915
GILLETTE.IOWA CORN VEGETABLE-GARDEN* GI	069	1891
GOSSARD.LARVAL-DESCRIPTION NATURAL-ENEMI	076	1917
GRASS-MEADOW* CIPR.VEGETABLES TOBACCO O	028	1950
GRASS-MEADOW* FORBES.CLOVER ILLINOIS LA	055	1890
GRASS-TURF* CIPR.HOLLYHOCKS ONTARIO GRA	017	1933
GRASSES CLOVER STRAWBERRY BEAN PEA SQUAS	044	1918
GRASSES PASTURE* ANONYMOUS.CHILE FELTIA	002	1921
GRASSES-PASTURE LIFE-HISTORY* WALKDEN.G	159	1950
GRASSLAND CORN* CEIR.VEGETABLE-GARDENS	147	1962
GROTE.BRITISH-COLUMBIA* GROTE.BRITISH-C	072	1875
GROTE.GENITALIA-MALE TAXONOMY AGROTIS*	074	1891
GROTE.SYNONYMY* GROTE.SYNONYMY* GROTE.	075	1896
GROTE.SYNONYMY* GROTE.SYNONYMY* GROTE.	073	1891
GROTE.SYNONYMY JACULIFERA-AGROTIS* GROT	071	1873
GROTE.SYNONYMY* GROTE.SYNONYMY* GROTE.	070	1868
GUENEE.MOTH-DESCRIPTION* GUENEE.MOTH-DE	077	1852
HART.HOST-RANGE LIFE-CYCLE MOTH-DESCRIPT	078	1903
HELIONTHUS LIFE-HISTORY* BALDUF.OVIPOSI	005	1931
HERILIS-AGROTIS AGROTIS-TRICOSA SYNONYMS	104	1881
HERILIS-AGROTIS* FORBES.SYNONYMS JACULI	057	1905
HOLLAND.MOTH-IDENTIFICATION GEOGRAPHICAL	079	1968
HORSE-RADISH* CROSBY.EGG-DESCRIPTION LA	044	1918
HOST-RANGESEASONAL-DISTRIBUTION* KNUTSO	081	1944
HOST-RANGE LARVAL-HABITS SYNONYMS ECONOM	048	1929
HOST-RANGE SYNONYMY* TIETZ.LEPIDOPTERA	120	1951
IL* CEIR.CORN MISSOURI CHRYSANTHEMUMS N	164	1963
ILLINOIS ALFALFA NEBRASKA* CEIR.CORN MI	146	1961
ILLINOIS GARDEN-PLANTS MISSOURI CHRYSANT	147	1962
ILLINOIS LARVAL-DESCRIPTION GRASS-MEADOW	055	1890
ILLINOIS* BALDUF.OVIPOSITION OHIO ILLIN	012	1942
ILLINOIS* CEIR.MISSOURI CORN ILLINOIS*	145	1960
INDIANA* WEBSTER,STRAWBERRIES INDIANA*	163	1889
IOWA LIGHT-TRAPS* IPS.NEBRASKA ALFALFA	124	1922

IOWA MICHIGAN WISCONSIN* CEIR.CORN NEBR	153	1968
IOWA WISCONSIN OHIO COLORADO LIGHT-TRAPS	148	1963
IOWA* CEIR.CORN OHIO PENNSYLVANIA SUGAR	150	1965
IPS.CLOVER WEEDS MISSISSIPPI* IPS.CLOVE	125	1924
IPS.CORN NEBRASKA* IPS.CORN NEBRASKA*	128	1927
IPS.FLAX MINNESOTA* IPS.FLAX MINNESOTA*	127	1926
IPS.KANSAS ALFALFA* IPS.KANSAS ALFALFA*	131	1933
IPS.NEBRASKA ALFALFA IOWA LIGHT-TRAPS*	124	1922
IPS.PASTURES KANSAS TOBACCO NORTH-CAROLI	135	1938
IPS.POPULATION-DENSITY TENNESSEE* IPS.P	132	1934
IPS.TIMOTHY BLUEGRASS TENNESSEE ALFALFA	134	1937
IPS.VEGETABLE-GARDENS TENNESSEE ALFALFA	133	1935
IPS.VEGETABLE-GARDENS WASHINGTON* IPS.V	130	1932
IPS.VEGETABLE-GARDENS NEBRASKA* IPS.VEG	129	1931
IPS.VEGETABLES TRUCK-CROPS MISSISSIPPI C	126	1925
JACULIFERA-AGROTIS* WALKER.MOTH-DESCRIP	161	1856
JACULIFERA-FELTIA* TURNER LIGHT-TRAPS J	122	1918
JACULIFERA-AGROTIS TRITICI-AGROTIS AGROT	110	1895
JACULIFERA-AGROTIS* GROTE.SYNONYMY JACU	071	1873
JACULIFERA-FELTIA LARVAL-DESCRIPTION GEO	057	1905
JACULIFERA-AGROTIS* BOWLES.SYNONYMS COM	010	1879
KANSAS CORN FLAX ONIONS SOYBEANS RASPBERR	133	1935
KANSAS NEBRASKA SEASONAL-DISTRIBUTION GE	157	1942
KANSAS TOBACCO NORTH-CAROLINA MICHIGAN N	135	1938
KANSAS* IPS.TIMOTHY BLUEGRASS TENNESSEE	134	1937
KENTUCKYIOWA* IPS.VEGETABLES TRUCK-CROP	126	1925
KING.LIGHT-TRAP POPULATION-TRENDS SEASON	080	1949
KNUTSON.MINNESOTA PHALAENIDAE ECONOMIC-I	081	1944
LARVAL-ATTRACTANTS* MORRILL.POISON-BAIT	092	1919
LARVAL-DESCRIPTION GEOGRAPHICAL-DISTRIBU	050	1956
LARVAL-DESCRIPTION GRASS-MEADOW* FORBES	055	1890
LARVAL-DESCRIPTION GEOGRAPHICAL-DISTRIBU	057	1905
LARVAL-DESCRIPTION PUPAL-DESCRIPTION MOT	058	1878
LARVAL-DESCRIPTIONMOTH-DESCRIPTION* FRE	059	1878
LARVAL-DESCRIPTION MOTH-DESCRIPTION* FR	060	1878
LARVAL-DESCRIPTION* CRUMB.CLIMBING-CUTW	049	1932
LARVAL-DESCRIPTION* STEDMAN.WHEAT MISSO	117	1902
LARVAL-DESCRIPTION MOTH-DESCRIPTION CORN	044	1918
LARVAL-DESCRIPTION* SLINGERLAND.LIFE-HI	111	1895
LARVAL-DESCRIPTION LARVAL-KEY MINNESOTA*	043	1934
LARVAL-DESCRIPTION MOTH-ILLUSTRATION SEA	087	1880
LARVAL-DESCRIPTION* SAUNDERS.FRUIT LAR	107	1883
LARVAL-DESCRIPTION SEASONAL-DISTRIBUTION	166	1935
LARVAL-DESCRIPTION FRUIT-TREES* GIBSON.	067	1912
LARVAL-HABITS SYNONYMS ECONOMIC-IMPORTAN	048	1929
LARVAL-ILLUSTRATION MOTH-ILLUSTRATION*	094	1917
LARVAL-KEY MINNESOTA* COOK.LARVAL-DESC	043	1934
LARVAL-KEY MINNESOTA* COOK.POISON-BAITS	042	1920
LARVAL-SAMPLING POPULATION-DENSITY* WAL	158	1943
LARVAL-SAMPLING TRAPPING-LARVAE* WHITCO	167	1928
LEGUMES CORN MISSOURI PASTURES MARYLAND	141	1957
LEGUMES* CEIR.CUCUMBERS RASPBERRY PENNS	139	1956
LIFE-CYCLE CORN* STEDMAN.MISSOURI LIFE-	118	1906
LIFE-CYCLE MOTH-DESCRIPTION* HART.HOST-	078	1903
LIFE-CYCLE* GARMAN.KENTUCKY LIFE-CYCLE*	064	1892
LIFE-HISTORY VEGETABLE-GARDENS* RILEY.I	103	1869

LIFE-HISTORY* WALKDEN.GEOGRAPHICAL-DIST	159	1950
LIFE-HISTORY LITERATURE* TIETZ.HOST-RAN	121	1972
LIFE-HISTORY* BALDUF.OVIPOSITION HELION	005	1931
LIFE-HISTORY GEOGRAPHICAL-DISTRIBUTION*	089	1956
LIFE-HISTORY GEOGRAPHICAL-DISTRIBUTION H	048	1929
LIGHT-TRAPS* CIPR.ONTARIO LIGHT-TRAPS*	020	1938
LIGHT-TRAPS* CIPR.ONTARIO LIGHT-TRAPS*	021	1941
LIGHT-TRAPS SOUTH-DAKOTA* CEIR.CORN NEB	154	1970
LIGHT-TRAPS* LINOIS IOWA WISCONSIN OHIO	148	1963
LIGHT-TRAPS* CEIR.PASTURES LEGUMES CORN	141	1957
LIGHT-TRAPS MARYLAND* CEIR.ALFALFA MISS	140	1956
LIGHT-TRAPS ECONOMIC-IMPORTANCE* FORBES	061	1923
LIGHT-TRAPS* IPS.NEBRASKA ALFALFA IOWA	124	1922
LIGHT-TRAPS JACULIFERA-FELTIA* TURNER L	122	1918
LINOIS IOWA WISCONSIN OHIO COLORADO LIGH	148	1963
LINTNER.SYNONYMS* LINTNER.SYNONYMS* LI	082	1874
LITERATURE* TIETZ.HOST-RANGE LIFE-HISTO	121	1972
MALLOW-COMMON* CIPR.ONTARIO TOBACCO MAL	027	1949
MANITOBA* CIPR.FIELD-CROPS SUNFLOWERS M	025	1945
MARCOVITCH.POISON-BAITS MOTH-ILLUSTRATIO	086	1931
MARCOVITCH.ARSENICAL-COMPOUNDS FLUORINE-	085	1928
MARCOVITCH.CHEMICAL-CONTROL REPELLENTS*	084	1928
MARTEN.ILLINOIS LARVAL-DESCRIPTION MOTH-	087	1880
MARTIN.PHYLOGENETIC-SIGNIFICANCE MOTH-PR	088	1934
MARYLAND LIGHT-TRAPS* CEIR.PASTURES LEG	141	1957
MARYLAND* CEIR.ALFALFA MISSOURI RED-CLO	140	1956
MCDUNNOUGH.CHECK-LIST SYNONYMY* MCDUNNO	083	1938
MECHANICAL-CONTROL TENNESSEE VIRGINIA*	039	1957
MERRILL.ECONOMIC-IMPORTANCE LIFE-HISTORY	089	1956
MERRILL.LIFE-HISTORY GEOGRAPHICAL-DISTRI	090	1957
MICHIGAN NEBRASKA* IPS.PASTURES KANSAS	135	1938
MICHIGAN WISCONSIN* CEIR.CORN NEBRASKA	153	1968
MICHIGAN* CEIR.CORN NEBRASKA PENNSYLVAN	155	1971
MINNESOTA* COOK. LARVAL-DESCRIPTION LAR	043	1934
MINNESOTA* COOK.POISON-BAITS LARVAL-KEY	042	1920
MINNESOTA* IPS.VEGETABLE-GARDENS TENNES	133	1935
MINNESOTA* IPS.FLAX MINNESOTA* IPS.FLA	127	1926
MISSISSIPPI CORN TOBACCO KENTUCKYIOWA*	126	1925
MISSISSIPPI SASKATCHEWAN* CIPR.COLVER M	015	1924
MISSISSIPPI* IPS.CLOVER WEEDS MISSISSIP	125	1924
MISSISSIPPI TOMATOES* WEDGEWORTH.POISON	164	1926
MISSOURI ALFALFA VEGETABLE-CROPS OHIO*	149	1964
MISSOURI CHRYSANTHEMUMS GRASSLAND CORN*	147	1962
MISSOURI CHRYSANTHEMUMS NEBRASKA CLOVER	164	1963
MISSOURI ILLINOIS ALFALFA NEBRASKA* CEI	146	1961
MISSOURI LARVAL-DESCRIPTION* STEDMAN.WH	117	1902
MISSOURI PASTURES ALFALFA RED-CLOVER* C	144	1959
MISSOURI PASTURES MARYLAND LIGHT-TRAPS*	141	1957
MISSOURI PASTURES LEGUMES* CEIR.CUCUMBE	139	1956
MISSOURI PEAS PENNSYLVANIA ALFALFA WISCO	151	1966
MISSOURI RED-CLOVER DELAWARE LIGHT-TRAPS	140	1956
MISSOURI* CEIR.CORN BLUEGRASS MISSOURI*	143	1958
MISSOURI* CEIR.LARVAL-POPULATIONS RED-C	137	1954
MORRILL.POISON-BAITS LARVAL-ATTRACTANTS*	092	1919
MOTH-DESCRIPTION* FRENCH.ILLINOIS LARVA	060	1878
MOTH-DESCRIPTION VEGETABLES* FRENCH.ILL	058	1878

MOTH-DESCRIPTION* FITCH.NEW-YORK MOTH-D	054	1856
MOTH-DESCRIPTION* HART.HOST-RANGE LIFE-	078	1903
MOTH-DESCRIPTION* PERKINS.LARVAL-DESCRI	100	1894
MOTH-DESCRIPTION CORN WHEAT GRASSES CLOV	044	1918
MOTH-ILLUSTRATION* ORTON.VEGETABLE-GARD	094	1917
MOTH-ILLUSTRATION* HOLLAND.MOTH-IDENTIF	079	1968
MOTH-ILLUSTRATION CONTROL-RECOMMENDATION	086	1931
MOTH-ILLUSTRATION SEASONAL-HISTORY* MAR	087	1880
MOTH-ILLUSTRATION* PACKARD.LARVAL-DESCR	097	1881
MOTH-PROTEINS* MARTIN.PHYLOGENETIC-SIGN	088	1934
MUESEBECK.APANTELES PARASITES APANTELES-	093	1920
NATURAL-ENEMIES CONTROL PREDATORSPARASIT	076	1917
NEBRASKA CORN MISSOURI ALFALFA VEGETABLE	149	1964
NEBRASKA CLOVER ALFALFA IL* CEIR.CORN M	164	1963
NEBRASKA ILLINOIS GARDEN-PLANTS MISSOURI	147	1962
NEBRASKA LIGHT-TRAPS SOUTH-DAKOTA* CEIR	154	1970
NEBRASKA ONIONS PENNSYLVANIA SOYBEANS IO	153	1968
NEBRASKA PENNSYLVANIA BLACK-LIGHT-TRAPS	155	1971
NEBRASKA SEASONAL-DISTRIBUTION GEOGRAPHI	157	1942
NEBRASKA* CEIR.PEAS PENNSYLVANIA ASPARA	152	1967
NEBRASKA* CEIR.CORN MISSOURI ILLINOIS A	146	1961
NEBRASKA* IPS.PASTURES KANSAS TOBACCO N	135	1938
NEBRASKA* IPS.VEGETABLE-GARDENS NEBRASK	129	1931
NEBRASKA* IPS.CORN NEBRASKA* IPS.CORN	128	1927
NEW-HAMPSHIRE MICHIGAN* CEIR.CORN NEBRA	155	1971
NEW-YORK IOWA* CEIR.CORN OHIO PENNSYLVIA	150	1965
NORTH-CAROLINA MICHIGAN NEBRASKA* IPS.P	135	1938
NORTH-CAROLINA* SHERMAN.CORN NORTH-CARO	108	1914
OATS SASKATCHEWAN* CIPR.FLOWERS OATS SA	024	1944
OHIO COLORADO LIGHT-TRAPS* LINOIS IOWA	148	1963
OHIO ILLINOIS* BALDUF.OVIPOSITION OHIO	012	1942
OHIO PENNSYLVANIA SUGAR-BEET NEW-YORK IO	150	1965
OHIO* CEIR.WHEAT NEBRASKA CORN MISSOURI	149	1964
OHIO* CLAYPOLE.LIGHT-ARC-LAMPS OHIO* C	169	1885
ONIONS PENNSYLVANIA SOYBEANS IOWA MICHIG	153	1968
ONIONS SOYBEANS RASPBERRY MINNESOTA* IP	133	1935
ONTARIO FLOWERS VEGETABLES FLAX SASKATCH	023	1943
ONTARIO GRASS-TURF* CIPR.HOLLYHOCKS ONT	017	1933
ONTARIO GRASS-MEADOW* CIPR.VEGETABLES T	028	1950
ONTARIO POISON-BAITS* ARNOTT.TOBACCO ON	004	1943
ONTARIO SASKATCHEWAN* CIPR.FLAX ALFALFA	022	1942
ONTARIO* CIPR.LIGHT-TRAPS ONTARIO* CIP	031	1959
ONTARIO* CIPR.RASPBERRY ONTARIO* CIPR.	018	1935
ONTARIO* CIPR.POTATOES ONTARIO* CIPR.P	029	1951
ONTARIO* CIPR.TOBACCO ONTARIO* CIPR.TO	036	1964
ONTARIO* CIPR.TOBACCO ONTARIO* CIPR.TO	035	1963
ONTARIO* CIPR.LIGHT-TRAPS ONTARIO* CIP	034	1962
ONTARIO* CIPR.LIGHT-TRAPS ONTARIO* CIP	033	1961
ONTARIO* CIPR.LIGHT-TRAPS ONTARIO* CIP	032	1960
ONTARIO* CIPR.GRASS-SOD ONTARIO* CIPR.	019	1936
ORTON.VEGETABLE-GARDEN LARVAL-ILLUSTRATI	094	1917
OSBORN.MOTH-ILLUSTRATION WESTERN-STRIPED	095	1878
PACKARD.LARVAL-DESCRIPTION MOTH-ILLUSTRA	097	1881
PACKARD.SEASONAL-DISTRIBUTION AGROTIS-CO	096	1869
PADILLA.DIELDRIN CHLORINATED-HYDROCARBON	098	1952
PALM.POISON-BAITS* PALM.POISON-BAITS*	099	1943

PARASITES APANTELES-FORBESI*	MUESEBECK.	093	1920
PARASITIC-NEMATODE*	PUTTLER,NEMOTODE-PA	101	1971
PASTURE*	ANONYMOUS,CHILE FELTIA-SUBGOTH	002	1921
PASTURES ALFALFA RED-CLOVER*	CEIR,CORN	144	1959
PASTURES LEGUMES*	CEIR,CUCUMBERS RASPBE	139	1956
PASTURES MARYLAND LIGHT-TRAPS*	CEIR,PAS	141	1957
PATHOGENS*	SPEARE,SOROSPORELLA-UVELLA P	115	1920
PEA SQUASH CUCUMBERTOMATO SWEET-POTATO C		044	1918
PEAS PENNSYLVANIA ALFALFA WISCONSIN*	CE	151	1966
PEAS WESTERN-STRIPED-CUTWORMS ECONOMIC -		038	1898
PENNSYLVANIA MISSOURI PASTURES LEGUMES*		139	1956
PENNSYLVANIA SUGAR-BEET NEW-YORK IOWA*		150	1965
PENNSYLVANIA ALFALFA WISCONSIN*	CEIR.CO	151	1966
PENNSYLVANIA ASPARAGUS DELAWARE CORN NEB		152	1967
PENNSYLVANIA SOYBEANS IOWA MICHIGAN WISC		153	1968
PENNSYLVANIA BLACK-LIGHT-TRAPS NEW-HAMPS		155	1971
PENNSYLVANIA HOST-RANGE SYNONYMY*	TIETZ	120	1951
PERKINS,LARVAL-DESCRIPTION MOTH-DESCRIPT		100	1894
PHALAENIDAE ECONOMIC-IMPORTANCE HOST-RAN		081	1944
POISON-BAITS*	CLARK,LARVAL-HABITS WISCO	040	1938
POISON-BAITS*	ARNOTT,TOBACCO ONTARIO PO	004	1943
POISON-BAITS*	CRUMB,SEASONAL-HISTORY PO	047	1927
POPULATION-DENSITY*	WALKDEN,SACK-TRAPS	158	1943
POPULATION-DENSITY*	WADLEY,ERIOPYGA-INC	156	1920
POPULATION-DYNAMICS*	SLINGERLAND,NEW-YO	109	1893
POPULATION-TRENDS SEASONAL-DISTRIBUTION*		080	1949
PREDATORS PARASITES*	GOSSARD,LARVAL-DESC	076	1917
PUPAL-DESCRIPTION MOTH-DESCRIPTION VEGET		058	1878
PUTTLER,NEMOTODE-PARASITE PARASITIC-NEMA		101	1971
RASPBERRY PENNSYLVANIA MISSOURI PASTURES		139	1956
RASPBERRY MINNESOTA*	IPS,VEGETABLE-GARD	133	1935
RED-CLOVER*	CEIR,CORN MISSOURI PASTURES	144	1959
RED-CLOVER DELAWARE LIGHT-TRAPS MARYLAND		140	1956
RED-CLOVER ALFALFA MISSOURI*	CEIR,LARVA	137	1954
REPELLENTS*	MARCOVITCH,CHEMICAL-CONTROL	084	1928
RILEY,AGROTIS-HERILIS TRICOSA-ATROTIS HE		104	1881
RILEY,ILLINOIS LIFE-HISTORY VEGETABLE-GA		103	1869
RILEY,JACULIFERA-AGROTIS SYNONYMS*	RILE	105	1882
RILEY,STRIPED-CUTWORM*	RILEY,STRIPED-CU	102	1867
ROEDER,FLIGHT-BEHAVIOR ULTRASOUND-RESPON		106	1967
SASKATCHEWAN*	CIPR,WHEAT SASKATCHEWAN*	037	1966
SASKATCHEWAN*	CIPR,FLOWERS OATS SASKATC	024	1944
SASKATCHEWAN*	CIPR,TOBACCO ONTARIO FLOW	023	1943
SASKATCHEWAN*	CIPR,FLAX ALFALFA TOBACCO	022	1942
SASKATCHEWAN*	CIPR,COLVER MISSISSIPPI S	015	1924
SAUNDERS,FRUITS LARVAL-DESCRIPTION*	SAU	107	1883
SCIENTIFIC-NAMES*	BLICKENSTAFF.COMMON-N	009	1970
SEASONAL-DISTRIBUTION*	KING,LIGHT-TRAP	080	1949
SEASONAL-DISTRIBUTION*	GARMAN,KENTUCKY	065	1895
SEASONAL-DISTRIBUTION*	WHELAN,LARVAL-KE	166	1935
SEASONAL-DISTRIBUTION GEOGRAPHICAL-DISTR		157	1942
SEASONAL-DISTRIBUTION GEOGRAPHICAL-DISTR		053	1940
SEASONAL-HISTORY*	MARTEN,ILLINOIS LARVA	087	1880
SHERMAN,CORN NORTH-CAROLINA*	SHERMAN,CO	108	1914
SLINGERLAND,SYNONYMY TRICOSA-AGROTIS*	S	112	1896
SLINGERLAND,LIFE-HISTORY LARVAL-DESCRIPT		111	1895

SLINGERLAND.SYNONOMY AGROTIS-JACULIFERA	110	1895
SLINGERLAND.NEW-YORK POPULATION-DYNAMICS	109	1895
SMITH.CHECKLIST-LEPIDOPTERA* SMITH.CHEC	113	1891
SMITH.SYNONOMY* SMITH.SYNONOMY* SMITH.	114	1896
SODIUM-ARSENITE SODIUM-FLUOSILICATE* MA	085	1928
SODIUM-FLUOSILICATE* MARCOVITCH.ARSENIC	085	1928
SOUTH-DAKOTA* CEIR.CORN NEBRASKA LIGHT-	154	1970
SOYBEANS IOWA MICHIGAN WISCONSIN* CEIR.	153	1968
SOYBEANS RASPBERRY MINNESOTA* IPS.VEGET	133	1935
SPEAKE.SOROSPORELLA-UVELLA PATHOGENS* S	115	1920
SQUASH CUCUMBERTOMATO SWEET-POTATO CABB	044	1918
STANLEY.ECOLOGY ECONOMIC-IMPORTANCE* ST	116	1936
STEDMAN.MISSOURI LIFE-CYCLE CORN* STEDM	118	1906
STEDMAN.WHEAT MISSOURI LARVAL-DESSCRIPTIO	117	1902
STEPHENS.MOTH-DESCRIPTION* STEPHENS.MOT	119	1829
STRAWBERRY BEAN PEA SQUASH CUCUMBERTOMAT	044	1918
SUGAR-BEET NEW-YORK IOWA* CEIR.CORN OHI	150	1965
SUNFLOWERS MANITOBA* CIPR.FIELD-CROPS S	025	1945
SWEET-POTATO CABBAGE HORSE-RADISH* CROS	044	1918
SYNONOMY GEOGRAPHICAL-DESTRIBUTION* FOR	062	1954
SYNONOMY* TIETZ.LEPIDOPTERA PENNSYLVANI	120	1951
SYNONOMY* MCDUNNOUGH.CHECK-LIST SYNONOM	083	1938
SYNONYMS ECONOMIC-IMPORTANCE* CRUMB.TOB	048	1929
SYNONYMS* RILEY.JACULIFERA-AGROTIS SYNO	105	1882
SYNONYMS* RILEY.AGROTIS-HERILIS TRICOSA	104	1881
SYNONYMS* TUTT.AGROTIS-TRITICI AGROTIS-	123	1896
TAXONOMY AGROTIS* GROTE.GENITALIA-MALE	074	1891
TENNESSEE ALFALFA KANSAS CORN FLAX ONION	133	1935
TENNESSEE ALFALFA WHEAT KANSAS* IPS.TIM	134	1937
TENNESSEE TOBACCO* MARCOVITCH.POISON-BA	086	1931
TENNESSEE VIRGINIA* CHAMBERLIN.LARVAL-D	039	1957
TENNESSEE* IPS.POPULATION-DENSITY TENNE	132	1934
TIETZ.HOST-RANGE LIFE-HISTORY LITERATURE	121	1972
TIETZ.LEPIDOPTERA PENNSYLVANIA HOST-RANG	120	1951
TOBACCO KENTUCKYIOWA* IPS.VEGETABLES TR	126	1925
TOBACCO MALLOW-COMMON* CIPR.ONTARIO TOB	027	1949
TOBACCO NORTH-CAROLINA MICHIGAN NEBRASKA	135	1938
TOBACCO ONTARIO GRASS-MEADOW* CIPR.VEGE	028	1950
TOBACCO ONTARIO SASKATCHEWAN* CIPR.FLAX	022	1942
TOBACCO* MARCOVITCH.POISON-BAITS MOTH-I	086	1931
TOBACCO* CRUMB.LARVAL-KEY TOBACCO* CRU	045	1915
TOMATOES* WEDGEWORTH.POISON-BAITS MISSI	164	1926
TRAPPING-LARVAE* WHITCOMB.CHICKWEED LAR	167	1928
TRICOSA-AGROTIS* SLINGERLAND.SYNONOMY T	112	1896
TRICOSA-ATROTIS HERILIS-AGROTIS AGROTIS-	104	1881
TRITICI-AGROTIS AGROTIS-TRITICI* SLINGE	110	1895
TRUCK-CROPS MISSISSIPPI CORN TOBACCO KEN	126	1925
TURNER LIGHT-TRAPS JACULIFERA-FELTIA* T	122	1918
TUTT.AGROTIS-TRITICI AGROTIS-JACULIFERA	123	1896
TYPE-SPECIMENS* DOD.SYNONOMY TYPE-SPECI	052	1911
ULTRASOUND-RESPONSE* ROEDER.FLIGHT-BEHA	106	1967
VEGETABLE-CROPS OHIO* CEIR.WHEAT NEBRAS	149	1964
VEGETABLE-GARDENS* RILEY.ILLINOIS LIFE-	103	1869
VEGETABLE-GARDEN* GILLETTE.IOWA CORN VE	069	1891
VEGETABLES* FRENCH.ILLINOIS LARVAL-DESC	058	1878
VEGETABLES FLAX SASKATCHEWAN* CIPR.TOBA	023	1945

VEGETABLES* CIPR.QUEBEC VEGETABLES* CI	016	1931
VEGETABLES* BLACKMORE,BRITISH COLUMBIA	008	1918
VIRGINIA* CHAMBERLIN,LARVAL-DESCRIPTION	039	1957
WADLEY,ERIOPYGA-INCINCTA POPULATION-DENS	156	1920
WALKDEN,GEOGRAPHICAL-DISTRIBUTION GRASSE	159	1950
WALKDEN,LIGHT-TRAPS KANSAS NEBRASKA SEAS	157	1942
WALKDEN,SACK-TRAPS LARVAL-SAMPLING POPUL	158	1943
WALKER,MOTH-DESCRIPTION JACULIFERA-AGROT	161	1856
WALKER,MOTH-DESCRIPTION* WALKER,MOTH-DE	160	1856
WASHINGTON* IPS,VEGETABLE-GARDENS WASHI	130	1932
WATERS,REARING-TECHNIQUE* WATERS,REARIN	162	1943
WEBSTER,STRAWBERRIES INDIANA* WEBSTER,S	163	1889
WEDGEWORTH,POISON-BAITS MISSISSIPPI TOMA	164	1926
WEEDS MISSISSIPPI* IPS,CLOVER WEEDS MIS	125	1924
WEIR,SYNONOMY* WEIR,SYNONOMY* WEIR,SYN	165	1891
WESTERN-STRIPED-CUTWORM JACULIFERA-AGROT	010	1879
WESTERN-STRIPED-CUTWORMS ECONOMIC -IMPOR	038	1898
WESTERN-STRIPED-CUTWORM* OSBORN,MOTH-IL	095	1878
WHEAT GRASSES CLOVER STRAWBERRY BEAN PEA	044	1918
WHEAT KANSAS* IPS,TIMOTHY BLUEGRASS TEN	134	1937
WHELAN,LARVAL-KEY LARVAL-DESCRIPTION SEA	166	1935
WHITCOMB,CHICKWEED LARVAL-SAMPLING TRAPP	167	1928
WISCONSIN OHIO COLORADO LIGHT-TRAPS* LI	148	1963
WISCONSIN POISON-BAITS* CLARK,LARVAL-HA	040	1938
WISCONSIN* CEIR,CORN NEBRASKA ONIONS PE	153	1968
WISCONSIN* CEIR,CORN MISSOURI PEAS PENN	151	1966
WOOD,ENGLAND* WOOD,ENGLAND* WOOD,ENGLA	168	1839